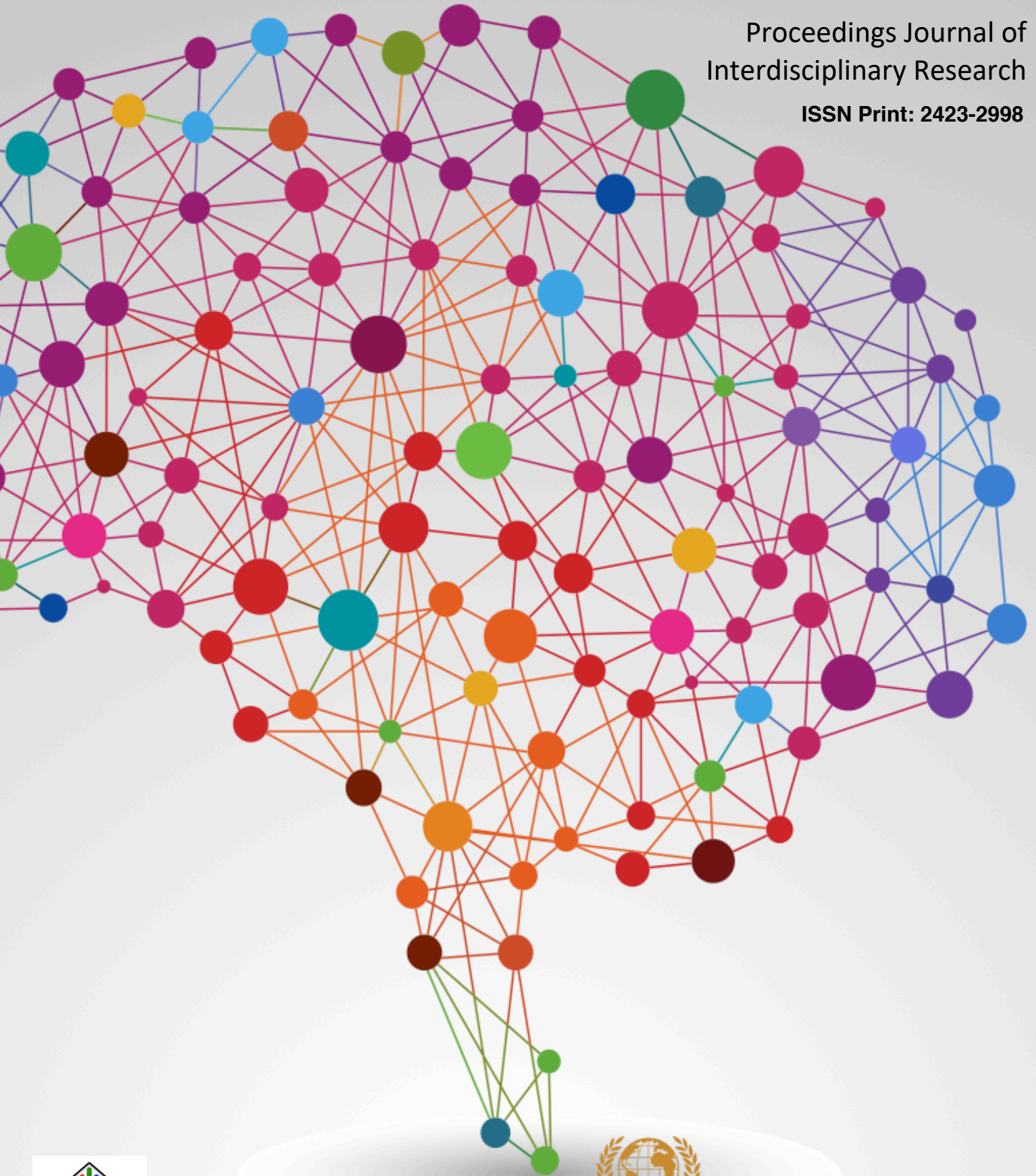


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Bryman, A. (2008). *Social research methods*. New York: Oxford University.

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Website:

Chua, C. (2004). Perception of quality in higher education. *Proceedings in the Australian universities quality forum 2004 AUQA Occasional Publication*. Retrieved October 25, 2008, from <http://www.auqa.edu/auqf/2004/program/papers/chua.pdf>

Higher Education Funding Council for England (HEFCE). (2006). *Higher education in further education colleges: Consultation on HEFCE policy*. Retrieved October 3, 2008, from http://www.hefceac.uk/pubs/hefce/2006/06_48/06_48.pdf

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An Advanced Version of CS Unplugged Activity 2

Abstract

In line with the global trend toward enhancing education on computer programming, Japan has begun to consider making programming a required subject at the elementary-school level. While traditionally some programming education has been conducted starting at the level of secondary education, this policy would introduce it as a required subject at an earlier stage. The authors are involved in programming education at a "Kosen" school, a unique higher education institution of science and technology in Japan that accepts as students junior-high-school graduates. However, since not a few students consider the subject to be difficult, they are in the process of seeking out effective educational methods for beginning learners of programming. As part of this process, we are carrying out research focused mainly on the continuation from CS Unplugged to full-fledged programming. Previously we proposed a Six-Step Method based on CS Unplugged, and we have put it into practice in the classroom. The six steps are as follows: Step 1: CS Unplugged Activity; Step 2: CS Plugged Activity; Step 3: visualisation of processing; Step 4: extraction of elements of processing; Step 5: writing Java source code; Step 6: validation through table tracing. However, the CS Unplugged Activity was devised originally for children who had no knowledge of computers. In addition, most of the activities prepared have concerned individual topics, with only weak connections among those topics. Focusing on these points, we devised a more advanced version as an activity connected to full-fledged programming and merging the two topics, important to initial study, of Activity 1 (Binary Numbers) and Activity 2 (Image Representation). This paper reports the results of using this version in classroom practice.

Keywords: Programming, CS Unplugged, CS Plugged, Java

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Introduction

CS Unplugged (The Unplugged Community, 2014) is a teaching method proposed by Tim Bell of the University of Canterbury in New Zealand, intended to teach information science without the use of computers. While CS Unplugged is considered effective in information science education (Idosaka et al., 2011), most related studies in Japan have been limited to the stage of motivation for learning. Other studies in Japan have looked at the use of CS Unplugged as a teaching aid for learning about algorithms (Manabe et al., 2013) and at its use in teaching the fundamentals of programming through a programming learning environment for beginners (Nishida et al., 2007). In addition, a study by Feaster et. al. (2011) has reported that it has been used with success, albeit only to a limited extent, in practice with high-school students.

However, at present almost no studies have been conducted on advancement from CS Unplugged to full-fledged programming languages.

Accordingly, we proposed a Six-Step Method based on CS Unplugged, and we have put it into practice in the classroom (Tanabe, et al., 2015). The six steps are as follows: Step 1: CS Unplugged Activity; Step 2: CS Plugged Activity; Step 3: visualisation of processing; Step 4: extraction of elements of processing; Step 5: writing Java source code; Step 6: validation through table tracing. However, the CS Unplugged Activity was devised originally for children who had no knowledge of computers. In addition, most of the activities prepared have concerned individual topics, with only weak connections among those topics. Focusing on these points, we devised a more advanced version as an activity connected to full-fledged programming and merging the two topics important to the initial study of Activity 1 (Binary Numbers) and Activity 2 (Image Representation), and we examined it for efficacy.

Statement of Objective

The objective of this study determines the perception of the students about programming using CS Unplugged because a look at the results of surveys of past classes that we taught showed that not a few students did not adequately understand programming or considered it a difficult challenge.

Methodology

About the CS Unplugged Activity

A typical CS Unplugged Activity involves individual topics from each area of information science, as shown below (excerpted).

Data: the raw material—Representing information
Count the Dots—Binary Numbers
Colour by Numbers—Image Representation
You Can Say That Again! —Text Compression
...
Putting Computers to Work—Algorithms
Battleships—Searching Algorithms
Lightest and Heaviest—Sorting Algorithms
Beat the Clock—Sorting Networks
...

An advanced version of CS Unplugged Activity 2

The CS Unplugged Activity was devised originally for children who had no knowledge of computers. In addition, most of the activities prepared have concerned individual topics, with only weak connections among those topics. Focusing on these points, we devised and implemented a more advanced version as an activity connected to full-fledged programming and merging the two topics important to the initial study of Activity 1: Binary Numbers and Activity 2: Image Representation. We then surveyed students and used their answers to validate its efficacy.

Activity 1: Binary Numbers is an activity intended for learning about the binary numbers used inside computers to express data. Figure 1 is a photo of our implementation of Activity 1 in the classroom.





Figure 1. Implementing Activity 1.

In implementing Activity 1, we developed the tool shown in Figure 2 as Step 2: CS Plugged Activity under the Six-Step Method and provided it to the students. In this tool students could click on face-down cards on which nothing was depicted to flip the cards over and reveal binary numbers depicted on their faces. It also automatically calculated the value of the cards, treating them as a string of binary numbers, and displayed their decimal value.

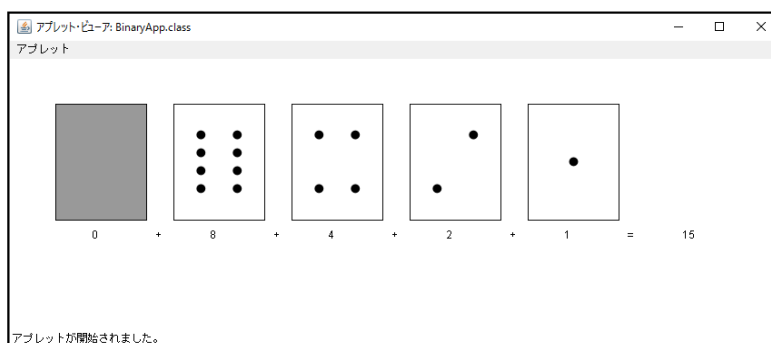


Figure 2. The Binary Numbers applet.

The students in this class already had learned computer fundamentals, binary numbers, and conversion between binary numbers and decimal/hexadecimal numbers in the previous school year.

As shown in Figure 3, the original Activity 2: Image Representation expresses a monochrome image by encoding it as a string of decimal numbers indicating the numbers of white and black pixels.

□	■	■	■	□	1, 3, 1
□	□	□	□	■	4, 1
□	■	■	■	■	1, 4
■	□	□	□	■	0, 1, 3, 1
■	□	□	□	■	0, 1, 3, 1
□	■	■	■	■	1, 4

Figure 3. Pixel representation and coding of a monochrome image.

We devised an advanced version of Activity 2 that would be close to the expression used inside a computer, by incorporating the binary numbers learned in Activity 1. That is, a string of binary numbers was created by representing white pixels using 0 and black pixels using 1 and this was encoded by converting it to hexadecimal notation to encode it (Figure. 4). In Figure. 4, “(16)” indicates use of hexadecimal notation.

□	■	■	■	□	0E (16)
□	□	□	□	■	01 (16)
□	■	■	■	■	0F (16)
■	□	□	□	■	11 (16)
■	□	□	□	■	11 (16)
□	■	■	■	■	0F (16)

```
import java.io.*;

public class ImageToCode {
    public static void main(String[] args) throws IOException {
        int num = 0;
        char moji;
        char a = '□';
        String buf, str = "";

        BufferedReader br = new BufferedReader(new InputStreamReader(System.in));

        System.out.println("Enter the image you would like to convert to hexadecimal notation one line at a time. Enter only [Ctrl]+[Z] on the final line.");

        while ((buf = br.readLine()) != null) {
            for(int i = 0 ; i < buf.length() ; i++){
                moji = buf.charAt(i);
                num = num << 1 ;

                if (moji == a) {
                    num += 0 ;
                } else {
                    num += 1 ;
                }
            }

            str = str + String.format("%04X\\n", num);
            num = 0;
        }
        System.out.print("\\n" + str);
    }
}
/*
Enter the image you would like to convert to hexadecimal notation one line at a time. Enter only [Ctrl]+[Z] on the final line.
□□□□■■■■■■■■■■■■■■■
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0FFC
0FF0
0FF0
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FFFF
7FFE
0FFC
*/
```

Results and Discussion

Name of class: Programming Theory

Students: Second-year students in the Management Information Science course at National Institute of Technology, Ube College (ages: 16-17)

Preexisting knowledge: Computer fundamentals, binary numbers, conversion between binary numbers and decimal/hexadecimal numbers, data expression, variables, basic Java programming syntax

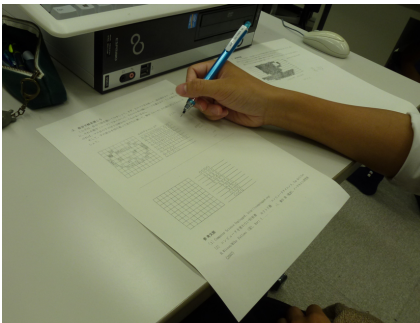


Figure 6. Implementation of the advanced version of Activity 2.

Results of the survey conducted are shown below (Table 1).

Questions

Q 1: What did you think of today's learning topic (activity), "Expressing color through numbers"?

Choices: A1. It was very interesting; A2. It was somewhat interesting; A3. It was not very interesting; A4. It was not interesting at all

Q2: Do you think CS Unplugged (manual task) is useful for learning to program?

Choices: A1. Yes; A2. A little; A3. Probably not; A4. No

Table 1. Survey results.

Q1	Q2
A1:9(23.7%)	A1:11(29.0%)
A2:23(60.5%)	A2:22(57.9%)
A3:5(13.2%)	A3:4(10.5%)
A4:1(2.6%)	A4:1(2.6%)
N/A:0(0%)	N/A:0(0%)

Looking at the results of the survey, the results for Question 1 show that the proposed method was received largely favorably from the perspective of motivation. However, from the results for Question 2 it can be said that at this stage it is not necessarily clear whether it is helpful for learning to program.

Conclusions and Recommendations

In order to lessen the feeling among beginning learners that programming is a difficult subject and to improve their understanding, we devised a more advanced version of an activity merging the two CS Unplugged topics of Activity 1: Binary Numbers and Activity 2: Image Representation and used it in classroom practice. The results showed that the proposed method was received largely favorably from the perspective of motivation. However, since in this case only one activity was implemented, and only one time, it can be said that it was not sufficient from the perspective of improving students' understanding.

In the future, there will be a need to develop advanced versions of multiple other activities as well and develop a systematic educational method corresponding to steps three and later of the Six-Step Method.

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Solid Waste Disposal Practices of the Atis (Aeta) of Boracay

Abstract

A rising quality of life and high rates of resource consumption patterns had an unintended and negative impact both on urban and rural environment and even on indigenous communities. Cities are now grappling with the problems of high volumes of waste, the costs involved, the disposal technologies and methodologies, and the impact of wastes on the local and global environment. This study is entitled Solid Waste Disposal Practices of the Atis (Aetas) of Boracay. The study was conducted to identify the Solid Waste Disposal Practices of the Atis in Boracay in terms of method of garbage storage and their methods of garbage disposal. It also seeks to identify activities/ programs implemented or practiced in the community to minimize improper waste disposal practices of every household in the community. The researcher to gather the information needed utilized a survey questionnaire. Interviews to 25 households and observations were conducted to further validate the authenticity of the data. Findings revealed that in terms of household garbage storage the respondents stored their garbage in a plastic bag, in an open container, and others pile it in the yard especially those biodegradable wastes. Concerning their garbage disposal practices, every household practiced proper segregation of waste. For their food waste they put it in basket compost, while plastic containers, bottles, metals and glass were segregated properly and disposed to a dumpsite through garbage collection. Trashes such as papers / cardboards were used for cooking by the Atis. Yard trimmings were used as compost as organic fertilizer. A once a week community cleaning is conducted by the Atis to maintain the cleanliness of their community where proper segregation of wastes was also monitored by the community organizer. In partnership with the Department of Agriculture Atis of Boracay were trained on basket composting to manage their biodegradable wastes. They were also guided by the policy of the Local Government unit of Malay on proper wastes disposal.

Keywords: Solid Waste Disposal practices, Atis

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Introduction

A healthy and attractive environment will lead to healthy people living in that community. As the world continues to progress, man's life also improves. People's behaviour towards waste is one of the key cultural aspects that are embedded in people's way of life. Recognizing the importance of the environment's immediate recovery and effects of improper waste management to the Philippines, there is a need for understanding and reformation of attitudes and concerns towards the protection of the environment. The impending problem can only be prevented if we practice proper solid waste disposal and it is one of biggest challenges today in order to preserve our environment.

Solid waste management is not new in our society. The only thing that is new is the method of waste disposal and what type of waste they produced. Individuals have been used to disposed trash and garbage in some ways. The Philippines is looming with garbage problems despite the passage of the Ecological Solid Waste Management Act or the Republic Act (RA) 9003. Government Agencies had been implementing policies on proper waste disposal not only on urban and rural environment but also to indigenous communities.

Boracay Island is located in the western tip of Panay Island and within the political jurisdiction of the Municipality of Malay in the province of Aklan known for its pristine white sand and as one of the famous beaches in the world. Here is where the *Atis*, an indigenous group, where claimed and believe to be the first inhabitants of Panay (*from www. MyBoracayGuide.com retrieved July 18, 2016*)

This group of people have rich cultures that need to be preserved and their simple way of living enabling them to survive in the island. With the entry of the tourists, migrants, and the investors, the tourism industry has started. The coming of the tourists in early 1970's and of the foreigners in 1980's become their life changes. From then on, Boracay was changed from a virgin island to an urbanized one with electricity, beach houses and infrastructure built within. The *Atis* now sees the different world where they were exposed to from traditional way of life to modern life (*Magos, 2005*).

As mentioned by A. Samar (2012),

"Tourism at Boracay has its great impact to the lives of the Atis. From a mere wanderer with a simple way of living they turned out to be sociologically and culturally equipped inhabitants in coping with the change being taken place on their environment. In terms of their health practices collection of garbage and disposal was introduced in the community to promote hygiene to the Atis. It serves as the right way of safeguarding health which leads to a better living to them."

This research explored the Solid Waste Disposal Practices of the Atis (Aeta) of Boracay in terms of their methods of waste storage and disposal. It also aims to find out the programs, activities conducted by the community on solid waste management. The study is anchored on the United Nations Millennium Development Goals (MDGs) adopted by 189 countries and signed by 147 heads of state and governments during the UN Millennium Summit in September 2000 (UNDP, 2007). The MDGs are eight goals to be achieved by 2015 that addresses the world's main development challenges and recognizes the interdependence between growth, poverty reduction and sustainable development. Though not as explicitly stated as in Agenda 21, sustainable solid waste management is indirectly advocated in the seventh goal which addresses environmental sustainability, and aims to integrate the principles of sustainable development into country policies and programs, and reverse the loss of environmental resources.

In response to the United Nations Millennium Development Goals (MDGs), Philippines created the REPUBLIC ACT 9003 last January 26, 2001 as an act providing for an ecological Solid Waste Management Program, creating the necessary institutional mechanisms and incentives, declaring certain acts prohibited and providing penalties, appropriating funds therefore, and for other purposes. (*www.gov.ph/2001/01/26/republic-act-no-9003-s-2001retrieved May 5, 2016*)

This study would like to unveil the methods of waste disposal practices of the Atis and the response of the indigenous communities to policies implemented by the National and Local government towards a sustainable environment.

Statement Of The Problem

1. To identify the Solid Waste Disposal Practices of the Atis (Aetas) of Boracay in terms of:



- a. Methods of garbage storage like closed container, open container, plastic bags, pile in the backyard and others.
- b. Methods of household garbage disposal like burning, bury, dumping, dumpsites, garbage truck, recycle, reuse, compost, and others

2. To find out activities/programs implemented in the community to minimize improper waste disposal practices in the community.

Methodology

Descriptive research design is a descriptive study in which information is collected without changing the environment (i.e., nothing is manipulated). Sometimes these are referred to as “correlational” or “observational” studies. A descriptive study can provide information about the naturally occurring health status, behavior, attitudes or other characteristics of a particular group. Descriptive studies are also conducted to demonstrate associations or relationships between things in the world around you. (ori.hhs.gov/education/products/sdsu/res_des1.htm retrieved July 18, 2016)

A survey questionnaire was directly utilized to 25 households at the Ati Community. A questionnaire composes of 3 parts: the first part is the type of garbage they produced, the second part is their garbage storage method based on the garbage/trash they produced, and the last part is the disposal method they practiced. To complement with the survey method, the researcher to the community conducted an interview and observation once a month within three months to further authenticate the data gathered. A naturalistic observation, a method that involves covertly or overtly watching subjects' behaviors in their natural environment, without intervention (Arenas A.C. 2006). The study was conducted at the 'Lupaing Ninuno' (Ancestral Land), a 2.1 hectares of land awarded to the members of Boracay Ati Tribal Community (BATO) as covered by a Certificate of Ancestral Domain Title (CADT) issued by the National Commission on Indigenous Peoples (NCIP) on January 21, 2011 (Boracay Ati Tribal Organization Files, 2011).

The data was analyzed using percentage distribution to further specify the type of solid waste disposal practices of the *Atis* of Boracay.

Results And Discussion

Table 1: Method of Household Garbage Storage

Type of Garbage	Type of Household Storage	%
Plastic, Metal, Paper, and Cardboard	Plastic Bags	96
Food and Glass	Open Container	84
Yard Trimmings	Pile in the Yard	52
Variety of Garbage (food, glass, plastic, etc.)	Closed Container	16

Table 1 shows that in terms of the method of garbage storage practiced by the 25 households, 96% used plastic bags as garbage storage of plastic, metal, paper and cardboard garbage. If the type of garbage is food and glass, 84% of the 25 households utilized open container household storage. However, if it is yard trimmings, 52% of the 25 households usually piled them in the yard especially those biodegradable wastes. In addition, there are only 16% of the 25 households put their garbage in closed containers.

Table 2: Type of Garbage and its Disposal Method

Type of Garbage	Disposal Methods	%
Food	Compost	92
	Dump	8
Plastic	Garbage Truck	96
	Reuse	4
Metal	Garbage Truck	96
	Reuse	4
Glass	Garbage Truck	100
Paper/Cardboard	Garbage Truck	64
	Burn	36
Yard Trimmings	Compost	100



In Table 2, it shows that 92% disposed their food garbage through compost disposal method and only 8% through dump disposal method. During disposal of plastic and metal garbage, 96% collected by the garbage truck and only 4% reused this garbage. Disposal of glass garbage utilized a 100% garbage truck disposal method. When it comes to disposal of paper/cardboard garbage, 64% put it in the garbage truck but 36% of these garbage usually burnt by the *Atis* in every household. And 100% practiced compost disposal method when it is yard trimming garbage.

Further results show that to minimize the improper solid waste disposal practices of the *Atis* (Aeta) in Boracay based on the interviews and observation conducted, these are the activities implemented by the community together with the Local Government Unit of Aklan and the Municipality of Malay. Among those are the following;

1. The LGU- Malay garbage collector used to collect the garbage twice a week, garbage are being inspected if it is properly segregated, if not the garbage collector will not collect the garbage of that household.
2. A weekly activity, specifically every Saturday morning the *Atis* (Aeta) is having their community cleaning under the supervision of the community organizer. The organizer monitors the proper segregation of wastes.
3. In partnership with the Department of Agriculture the *Atis* were trained on basket composting so that their food waste will be utilized and other biodegradable garbage.
4. The community is always guided by the policy of the Municipality of Malay on proper waste disposal.

Conclusion

Based on the findings of the study, the following have been concluded:

1. In terms of garbage storage practices of the *Atis* of Boracay, they preferred to use plastic bags, an open container for their garbage and used to pile in the yard their biodegradable waste.
2. In terms of their type of wastes and disposal method, composting of biodegradable wastes such as yard trimmings was practiced in the community. Trashes such as metal, plastics, glass and even paper/cardboards were collected in the community by the garbage truck. Their food rubbish was disposed by the household in their own basket compost. It simply indicates that the community is practicing solid waste segregation and proper disposal.
3. The *Ati* community have their own activity to minimize improper solid waste disposal of every household. The community organizer monitored the proper segregation of wastes; a weekly community cleaning conducted every Saturday is effective to increase the awareness and responsibilities of every household member towards a clean environment.
4. A strong partnership with the Department of Agriculture helped the community to acquire new skills and knowledge on basket composting, which is beneficial to the *Atis* in terms of disposing their food wastes, and other vegetable farming techniques which were introduced to them.
5. The Local Government Unit of Malay is strongly implementing their policy on Solid Waste Management. Collection of garbage is done regularly in the island. The policy is imposed in the municipality and the community was fully aware of it even to the indigenous community.

Recommendation

The recommendations of the study are the following:

1. The *Atis* should be encouraged to use closed container in storing their garbage for sanitation and safety. It is safe compared to use plastic bags and open container.
2. Composting of biodegradable waste such as food and yard trimmings will be continued to enrich their soil for them to cultivate vegetable within the community.
3. The *Atis* should be trained on recycling other junk such as metal, plastic, and glass for them to earn and convert those trashes into a reusable material.



4. A partnership with Department of Agriculture should be strengthened to be able to assist the *Ati* community to become more productive, inculcate them knowledge on farming, and cultivation of vegetables.
5. Continuous implementation of the policy in the municipality as well as household survey in every community should be employed to further validate the affectivity of the policy if it is totally practiced by the residents of Malay.

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Lovemaking: Sex Before Marriage (Perception Towards Premarital Sex)

Abstract

Adolescent pregnancy is becoming a matter of increasing concern. Johnson, (1972) revealed that pregnancy in the adolescent is the largest single reason why female students drop out of secondary schools. Early pregnancy and parenthood are established indicators of high-risk status for both mother and child with regard to future health problems, poverty, and child abuse and neglect. Premarital sex is a huge problem in society today; the numbers are staggering. Teens everywhere are not waiting until they are married to have sex. Teens are less developed emotionally and physically before having sex, and they are not prepared for the serious problems that come along with their decision to have sex. There are always consequences when a teenager chooses to have sex. Teens who engage in premarital sex are more likely to suffer negatively from long-term physical, emotional, social, and moral effects, than teens that choose to wait. The study was conducted to determine the perception of high school students in the District of Buruanga on premarital sex. Specifically, it attempted to determine the respondents' perception towards premarital sex and identified the source of information about sex. The survey questionnaire was administered to 80 respondents to examine their perception on pre-marital sex. Study revealed that respondents conveyed on a disagreed perception towards pre-marital sex; that there is no significant difference on the respondents' insight on the practice of premarital sex as grouped according to sex. It shows that, the high school students in the District of Buruanga disagreed on the practice of premarital sex; that, mass media (television, internet, social networks), books and friends were the respondents' main source information about sex. Young people should be informed in order that teenage pregnancies, early or untimely experience of motherhood or fatherhood could be avoided.

Keywords: lovemaking, premarital sex, perception

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Introduction

Background of the Study

Sexuality is an instinct imprinted into the genes of each living creature. Attraction to the opposite sex has been the key factor behind reproduction and survival of each species. Most of the species are born with only seasonal sexual necessities. They mate and reproduce only at limited times a year. Human beings, on the other hand, have active sexual instincts throughout his/her life; right from the very day he/she discovers his/her sexuality in pre-adulthood. This instinct has found overpowering the cultural advancement we have gained over the past.

Adolescent pregnancy is becoming a matter of increasing concern. Johnson, (1972) revealed that pregnancy in the adolescent is the largest single reason why female students drop out of secondary schools. Early pregnancy and parenthood are established indicators of high-risk status for both mother and child with regard to future health problems, poverty, and child abuse and neglect.

In this modern time, sensitivity is necessary in the making of decisions. This will help the person visualizes ahead of time the occurrence of events, incidence or consequences of his or her actions. The decisions of a person come from within; however, this personal decision sometimes needs the perspective of others to consider important details before its finality. One of the important details in life that extremely need prudent and careful decision is whether to engage or not to engage pre-marital sex. Since the action to be done is a big part of person's life in the future. Its decisiveness or certainty must be thought well and be given an intense meaning.

Teenagers are vulnerable population to engage pre-marital sex. For their best interest they need protection not only by the state but also by the experienced people around them. This protection may not be by means of legal action but through the clearness of their minds regarding pre-marital sex issues so that they could think well with certainty.

Pre-marital sex is terminologies, which are mostly overheard by people from the teenagers. Some engaged in this act in a casual way and think its effect after they have committed such activity. It is of common knowledge that when a man and woman engaged in sexual intercourse it is coupled with procreation. This will result to pregnancies and for teenagers this will be an early entrance to the world of motherhood. The only issue that is not good to think about is when one or both participants are senseless on the consequences of the acts that they have done. Premarital sex is term, which refers to any sexual activity between consenting unmarried partners. It is a voluntary sexual intercourse between persons not married to each other. The whole are of sex and how to handle it can be a great struggle for today's singles. Premarital sex is a huge problem in society today, there are many people who have been married have lost their virginity before their honeymoon.

From this scenario, there are students dropped from school untimely the reason of not coming back to school anymore is the premature pregnancy due to pre-marital sex. This fact sounds the alarm and needs sensible attention.

It is in this context that the study was conducted to fairly investigate the perception of high school students in four (4) secondary institutions in the District of Buruanga as regards to premarital sex.

Statement of the Problem

The major purpose of this study was to find out what are the perceptions of young people—students attending high school, in particular — hold toward premarital sex relations.

Specifically, this study sought to answer the following questions:

1. What perception is manifested most by the respondents about premarital sex?
2. Is the respondents' insight on premarital sex differs in terms of their sex?
3. Among the seven (7) sources of information namely: a. mass media (*television, internet, social networks*); b. sex education in school / teachers; c. books; d. magazine; e. parents; f. friends; g. others, from which or whom did the respondents get much of their information about sex?

Methodology

The researcher used a descriptive research design, utilizing content analysis as the main technique. According to Sevilla (2010) it is the design appropriate for studies that aim to obtain facts or to ascertain the prevailing condition or situations, as they exist at the time of the study.



This study was conducted in the District of Buruanga, Buruanga, Aklan. The municipality of Buruanga is located 70 kilometers northwest of Kalibo, the capital town of the province of Aklan.

The respondents of the study were the high school students officially enrolled in four (4) secondary institutions in the District of Buruanga. The Schools included in the study were: Buruanga Vocational School, Buruanga National High School, Habana Integrated School and Buruanga Academy Incorporated.

In this study the researcher used a modified questionnaire. The questionnaire was patterned from the online Premarital Sex-A Survey Analysis.

Prior to data gathering, permission was obtained from the school administrator. Upon approval, parent's consent was secured before questionnaire was distributed to the respondents and explain to them on what they should do or write on the questionnaire.

All the quantitative data obtain was tallied, organized, tabulated and rank for statistical treatment.

Results and Discussion

Respondents' Insights on Premarital Sex

Table 1 presents the respondents perception on the practice of premarital sex. When the overall percentage was computed, it revealed that among the twelve (12) items, respondents agreed that Item No. 4, of the instrument which says that "sex before marriage is alright when safe sex practices are applied (like: use of artificial or natural family planning)" attracts significant attention with the rating of 0.35%. Followed with Item No. 7 which states "It is alright to have premarital sex in a relationship in which two people love each other" obtained a rating of 0.25%. And, Item No. 6 "it is acceptable for a couple who are involved in a sexual relationship to live together without being married" has 0.19%.

The overwhelming presence of technology surrounding our teenagers makes it easier than ever to access the Internet. Over 95 percent of today's teens and young adults are using the Internet, most using it several times a day (Pew 2011). In relation with, more than 4 out of 10 high school students report having had sex, and about a third of high school student are currently sexually active. Yet among those students, only 60 percent are using condoms to protect themselves when they have sex (CDC 2011). Results showed that, majority of the respondents strongly disagree on the practice of premarital sex. This means that respondents are likely to preserve the accepted societal order about sex and likely to go against liberalism. . This signifies that they disagree on some items that are utilized in this study, which describes insights, which favored premarital sex.

When grouped according to sex, respondents' perceptions on premarital sex vary from one another. Male respondents agreed that Item No. 4, of the instrument which says that "sex before marriage is alright when safe sex practices are applied (like: use of artificial or natural family planning)" attracts significant attention with the rating of 0.40%. Item No. 6, which states "it is acceptable for a couple that are involved in a sexual relationship to live together without being married" has 0.36%. And, Item No. 7, which states "It is alright to have premarital sex in a relationship in which two people love each other" obtained a rating of 0.32%.

The male respondents manifested that they tilted away from being conservative on their insights about premarital sex. The result expresses that from those who responded the questionnaire are slightly conservative. This means that a good number of male respondents are likely to preserve the accepted societal order about sex and likely to go against liberalism.

On the other hand, the insights of the female respondents are enthusiastically different the male respondents. This can be confirmed when the 0.55% of female respondents agreed on Item No. 1 of the instrument, which articulates that, "it is alright to have for pleasure". This thoughts of the female respondents suggest that if in case they will decide to engage in premarital sex they would like first to be acquainted with man. Respondents agreed that Item No. 4, of the instrument which says that "sex before marriage is alright when safe sex practices are applied (like: use of artificial or natural family planning)" attracts significant attention with the rating of 0.33%. %. And, Item No. 7, which states "It is alright to have premarital sex in a relationship in which two people love each other" obtained a rating of 0.22%.



The result illustrates that though man has been viewed by their double standard role in the society (Szeman, 1985) still they would not like to have premarital sex without love to their partner in bed. The Filipino values of high respect to woman can be viewed from what the males expressed in their responds.

In addition, some (35 or 39%) of the female – respondents show that they are slightly conservative. This is a similar way of declaring that they are likely to preserve the accepted societal order about sex; respondents certainly opposed liberalism.

Furthermore, some of the items in the instrument are answered by most of the respondents with disagree. This means that to several point they are not in favor on pre-marital sex. To those who oppose the idea of premarital sex is believed to have disproved the words of Leyson (n.d.), which verbalize, “ Virginity is no longer a universally expected prerequisite for the marriage covenant”. The researcher did not lock the result of this study since there might be new thoughts that may arise.

Additionally, to some extent the result of this study is in harmony with the what has been explained by the article entitled *Caring for Your Teenager* (2003) which says publicly that at late adolescence, a lot of young ones appear to value modification of situations and ideas and they now plan the future. They started to increase their thoughts and at this moment there is augmentation of their competence to solve problems; however, with the presence of their innocence in life they inconsistently apply their newly acquired ability and occasionally they may act with lack of correct judgment.

Table 1. Percentage (%) of respondents who agreed on the practice of premarital sex.

<i>Respondents Perceptions</i>	<i>M</i>	<i>F</i>	<i>T</i>
It is alright to have sex for pleasure?	0.24	0.55	0.11
It is okay to have sex just for fun if both people involved agree and do not expect a relationship to develop?	0.08	0.04	0.05
It is okay to have sex before marriage if it is with the person you are planning to marry?	0.24	0.15	0.18
Sex before marriage is alright when safe sex practices are applied (like: use of artificial or natural family planning)?	0.40	0.33	0.35
It is alright to have sex with someone whom a person have only known for a week?	0.00	0.00	0.00
It is acceptable for a couple who are involved in a sexual relationship to live together without being married?	0.36	0.11	0.19
It is alright to have premarital sex in a relationship in which two people love each other?	0.32	0.22	0.25
It is alright to have premarital sex in a relationship that has lasted at least a week?	0.12	0.02	0.05
One need not love a person whom he or she is going to have sex before marriage?	0.08	0.10	0.10
It is alright to have premarital sex with a man or woman who is married to another?	0.04	0.04	0.04
It is socially acceptable for women to have premarital sex as men?	0.12	0.04	0.06
Man or woman can engage premarital even if they are not yet married?	0.28	0.13	0.18

Sources of Information on Sex

Table 2 below shows the results that will answer the question raised in this study which says “ from where the respondents of this study get much of their information regarding sex”. The male and female respondents express that they acquire their information about sex from different sources.

Among the seven (7) items utilized as sources of information about sex, mass media (*television, internet, social networks*) got the highest rank, 64 of the respondents says that mass media was their source main of information, and this was followed by books, that 44 of the respondents revealed as to where information about sex was taken, followed with friends, that 42 of them get hold their information from friends.

This result could be equated with the statement of Leyson (n.d.) when he stipulated in his paper that currently the sexual attitudes of the people are more liberal. The birth of modern means of communication changes how teenagers visualize life in some ways. Moreover, the outcome of the study is not remote to the words of Stogdill (1998) quoted from the Time magazine/CNN survey which stipulates that “74% of teens said, their



friends and the television were major sources of sexual information” (as cited in the 4th edition book of King entitled in *Human Sexuality Today*) though in the present study, the friends of the respondents do not contribute a lot to their information about sex.

Only one (1 out 120) of the respondents says that she got much of her information about sex from her parents. This result is contrary to what was expressed by Stogdill (1998) quoted from the Time magazine/CNN survey, which says that 10% of teens say that their parents provided more information (as cited in the 4th edition book of King entitled in *Human Sexuality Today*).

Table 2. Source Where Much of the Information About Sex was obtained

Sources of information	F	Rank
1. mass media (television, internet, social networks)	64	1
2. books	44	2
3. friends	42	3
4. sex education in school / teacher	40	4
5. magazine	30	5
6. parents	17	6
7. others	16	7

Summary

The study was conducted to determine the perception of high school students on premarital sex. Specifically, it attempted to determine the respondent's perception towards premarital sex and identified the source of information about sex. The survey questionnaire was administered to 80 respondents to examine their perception on pre-marital sex.

Findings

1. Respondents' conveyed on a disagreed perception towards pre-marital sex.
2. Study revealed that there is no significant difference on the respondents' insight on the practice of premarital sex as grouped according to sex. It shows that, the high school students in the District of Buruanga disagreed on the practice of premarital sex.
3. Mass media (television, internet, social networks), books and friends were the respondents' main source information about sex.

Conclusion

In this permissive point in time though the respondents are at their late adolescence stage they did not absolutely submit to the liberal view on pre-marital sex. To some extent quite a lot of the respondents do not agree to pre-marital sex. The inherited values of conservativeness are still present in the minds of the young respondents. The mass media and the printed materials were rated significantly by the respondents as a source of their information on sex issues. The knowledge about sex from public discussion like those that are viewed over the television, Internet, and social networks, as a rule present correct information and more valuable truthful facts could be offered by the school. Young people should be informed in order that teenage pregnancies, early or untimely experience of motherhood or fatherhood could be avoided.

Recommendations

From the findings and conclusion, the following recommendations are hereby given:

1. That students to avoid erroneous decisions should equip themselves with the correct information about the effects of premarital sex in their life and future; they should not stop learning the good values of a Filipino woman.
2. That teachers should enhance and continue to instill to the minds of the young students correct values to let them feel the importance of their life and good future.
3. That parents should initiate moves to educate the young children so that they will be guided in all aspects of their life especially the challenges of this permissive time that are.



4. That school administrators should remind their teachers specifically those teaching the course on sex education to create more clear, good approaches towards learning the disadvantages of premarital sex.
5. That the local government should make the first move to extend education about premarital sex so that those young people who cannot access the formal education still able to learn the significance of preserving oneself for their future legitimate partner
6. That the people should be cautious in giving information about pre-marital to the young ones so that misinterpretation could be avoided.
7. That future researchers should gaze deeper on this issue and conduct an investigation on some other matter related to pre-marital sex.

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Lived Experiences Of Families With Children Diagnosed With Down Syndrome At Polangui, Albay

Abstract

This study focused on the background of the case, lived experiences of each family having a child with Down syndrome and how the families deal and cope with the problems and issues they have encountered in relation to the child's condition. The study was conducted in the municipality of Polangui, province of Albay, Philippines. The study was guided by Hill's ABCX model and Bowen Family system's theory. These theories explain how the family as an emotional unit is affected and copes with a stressor. In dealing with a certain stressor, several factors (i.e. event or stressor, internal and external family resources and family's perception of the stressor) affect their coping mechanism, which can either be positive or negative (family crisis). This study utilized the qualitative research design specifically the Phenomenological approach by Creswell. The subjective statements were transcribed, coded and organized to facilitate analysis and drawing of conclusion. Also, documents sought and written field notes were used to triangulate the data to assure of its validity and reliability. From the analysis of data, three themes emerged. Each theme was composed of categories. The themes formulated are: (1) Primary care providers' insights which focused separately on the child, child's condition, experience as a whole and beliefs possessed by the key informants; (2) The family dealing with child's condition which describes the families' experiences with the phenomena. This include exploration on the initial reactions felt by the key informants, psycho-behavioral experiences, family mechanism and interactions, health and illness management, caring experiences, character and capability formation, social experiences, spiritual experiences, challenges and issues encountered and coping mechanisms; and lastly (3) the child as a family member composed of the following sub themes: child's worth, looking through the child's future and effects to family. Looking holistically through the families' experiences of having a child with special needs, a model of care called as "Family Empowerment Model" was designed and formulated which aims to enhance the family and the child's capability to cope with the condition.

Keywords: Children, Down syndrome, Families, Lived Experiences

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Introduction

Seeing a child walking or running around and enjoys playing with other kids gives unexplainable joy to those who watch them. The child is ergo considered to be the most precious gift from God. On the contrary, if the parents who are hoping for a “perfect” baby soon learn that their child has special needs both physically and mentally; this may lead to overwhelming feelings of loss, guilt, fear and hopelessness to the family (Kermanshahi et. Al, 2008).

Down syndrome is the most common chromosomal abnormality that is frequently seen as 1 in 800 live births worldwide (Pilliteri, 2007). Moreover, Down syndrome is also identified as the most prevalent cause of intellectual disability, accounting for around 15-20% of the intellectually disabled population (Rutter, 2002). According to the National Statistics Office, the total population of the Philippines is 92, 337, 852 as of 2010 (Ericta, 2012). Given the approximation for the condition's incidence rate, there may be a hundred thousand persons in the Philippine population that is affected by the condition.

Under the Persons with Disabilities Program handled by the Rural Health Unit in the municipality of Polangui (2014), there are seventeen (17) listed cases of Down syndrome in the municipality. From the records reviewed, their ages range from six (6) months to twenty-three (23) years old; some of them attend the Special Education Program.

Though there are programs available for the families, there might be a number of them that cannot provide the special needs of their child. They may not have the capacity to bring their child to a specialist whenever medical problems arise due to financial constraints. Even the physical needs of the child may not be satisfied such as providing proper nutrition and a good living condition. With these observations, the researcher was provoked to explore the lived experiences of families having children with this condition. This current undertaking will focus on families with children diagnosed with Down syndrome, all of whom are residents of Polangui, Albay. Furthermore, the researcher aims to assess problems encountered in dealing with the child's condition and coping mechanism employed by families.

Statement of the Problem

The main problem of the study is to explore the lived experiences of families with children diagnosed with Down syndrome. Specifically, it attempted to answer the following questions:

1. What is the case background of the study?
2. What is the lived experience of each family while dealing with their child's condition?
3. How do the families deal with the challenges and issues encountered in relation to the child's condition?
4. What model of care can be formulated and recommended to enhance the family's and the child's capability to cope with the condition?

Methodology

The research method used in the study is the qualitative research design, which focuses on the subjective information describing how the individuals directly dealing with it experienced the phenomenon. As defined, it focuses on understanding the complexity of humans within the context of their lives. This involves the collection of information as people express it as they deal with a certain phenomenon. According to Estolas and Boquiren (1973), qualitative research design “describes and interprets what is, reveals conditions and relationships that exist or do not exist, practices that prevail or do not prevail, beliefs or point of view or attitudes that are held or not held, procedures that are continuing or otherwise, effects that are being felt or trends that are developing.”

In the process of investigating the phenomenon, the researcher utilized the Phenomenological approach by Creswell. Phenomenology or the phenomenologic method is a qualitative method that is used to discover and develop understanding of experiences as perceived by those living the experience (Creswell, 1998). Guided by Creswell's data analysis method, the researcher began the data analysis by: (1) reading and assigning initial codes to the transcriptions from interviews made with the key informants. The initial codes were written and listed for each interview; (2) the transcriptions were read several times and the additional codes were formulated and other changes with the initial codes were noted; (3) after a number of reviews through the transcriptions, the codes were grouped and categorized. The categories made were clustered into themes. To ease in the organization of data and facilitate analysis, the researcher used computer software where the formulated codes, categories and themes were used; (4) as the data became saturated and directly answers the research questions established, interpreting the data was the next step taken. The coded and categorized data were also validated with the key informants, written field notes and documents analyzed to assure reliability and accuracy of findings.



Results and Discussion

Profile of the Families

The study was participated by four (4) key informants all of whom are bonafide residents of Polangui. The demographic profile of each family is presented to give initial description of the families' composition. Determining the families' demographic profile can provide worthwhile data in looking through and understanding the families' lived experience having a child with special needs.

Table 1. Family Profile

		Family 1	Family 2	Family 3	Family 4
Age of Parents	Father	49 years old	48 years old	44 years old	45 years old
	Mother	47 years old	50 years old	41 years old	44 years old
Key Informants		Mother	Father	Father	Mother
Educational Attainment		College Undergraduate	College Undergraduate	High School Undergraduate	High School Graduate
Civil Status		Married	Married	Married	Married
Occupation	Father	Laborer	Fish vendor	Security guard	Butcher
	Mother	Bet collector	Fish vendor	Housewife	Housewife
Average Family Monthly Income		Php 5, 000	Php 15, 000 – 20, 000	Php 5, 000 – 10, 000	Php 10, 000 – 15, 000
No. of Children		9	5	1	4
Length of Residency		27 years	19 years	11 years	25 years
Age of Child with Down syndrome		9 years old	13 years old	7 years old	8 years old
Age of parents when child was born	Father	40 years old	35 years old	37 years old	37 years old
	Mother	38 years old	37 years old	33 years old	36 years old
With Family history of Down syndrome		Yes	Yes	No	Yes
Child's codename		Ren-ren	Eddie	Lyka	Yan-yan

Case Background

In giving light to the condition "Down syndrome" as a focus of this study, a discussion of the phenomenon is included here. The researcher explored the key informants' knowledge base regarding the condition. The understanding that they have with their child's condition as well as responding to their child's caring needs were gained through observation, knowledge gained from medical professionals and educators and from the encounters they have had from the past, shared stories from experienced individuals, hearsay and their presumptions.

Down syndrome or *Trisomy 21* is a condition caused by an extra chromosome 21 (Rutter, 2002). The reason for having the extra chromosome is still unknown. This chromosomal abnormality results to physical and developmental delays to children affected by the condition.

As explained by a medical professional to one of the key informants, all children with Down syndrome usually have some degree of cognitive challenge. The degree of cognitive challenge can range from that of less involvement (IQ 50 to 70) to one requiring total care (IQ less than 20). The cognitive challenge a child with Down syndrome has is not evident at birth (Pilliteri, 2007).

The child that is cognitively challenged does learn to walk, talk and be toilet trained but in general will meet these developmental milestones later than their non-disabled peers (Rutter, 2002). This could mean that parents of one would have to extend patience and give support to child's needs for development. Because of the developmental delay posed by the condition, children with Down syndrome need to be exposed to early educational and play opportunities (Pilliteri, 2007). This early intervention programs help in all areas of child development including speech and physical therapy as well as home teaching programs for the child and the family. Children and adults with Down syndrome can and do continue to learn throughout their lives just like the rest of the population (Rutter, 2002)



Aside from the developmental delays, children with Down syndrome have health problems. They appear to have altered immune function, making them prone to upper respiratory infections. Other conditions that are common to children with Down syndrome are lymphocytic leukemia, congenital heart diseases, especially atrioventricular disorders, stenosis or atresia of the duodenum, strabismus, and cataract disorders. It is also stated that even if children are born without an accompanying disorder such as heart disease, their lifespan generally is only 50 to 60 years, as aging seems to occur faster than in other people (Pilliteri, 2007). But, with the advances in treatment and increased access to medical care, people with the condition have a longer life expectancy at 60-65 and many people with Down syndrome live even longer (Rutter, 2002).

Having an extra chromosome gives the classic physical features and other associated distinctive characteristics of the condition. All of the key informants have mentioned about the characteristic features of their children. The characteristic features are common to all children with Down syndrome making them all look alike. Facial features that can be observed in a child with Down syndrome are a nose that is broad and flat; eyelids having an extra fold of tissue at the inner canthus; palpebral fissure (opening between the eyelids) tends to slant laterally upward; ears may be low-set and tongue protrusion can also be seen because the oral cavity is smaller than normal. Other physical features include a neck that is short; back of the head is flat; an extra pad of fat at the base of the head causes the skin to be so loose that it can be lifted up (like a puppy's skin). Muscle tone is poor, giving the baby a rag-doll appearance. This can be so lax that the child's toe can be touched against the nose (not possible in average mature newborn). The palm of the hand shows a peculiar crease (a simian line), which is a single horizontal palm crease rather than the normal three creases in the palm (Pilliteri, 2007).

The main cause of the condition is not yet known but certain contributing factors were cited to result to the condition. One of the factors is advanced maternal and paternal age. The condition occurs most frequently in the pregnancies of women who are older than 35 years of age (the incidence is as high as 1 in 100 live births for these women). Paternal age (older than 55 years) may also contribute to the increased incidence in this age group (Pilliteri, 2007). Studies have shown that conceiving a baby with Down syndrome may occur at any mothers' age but the prevalence increases with the advanced maternal age. Further, if a mother had previously had a baby with Down syndrome, the risk of having another affected baby is increased. About 1 in 100 women with a previous baby with Down syndrome will have another child with the same condition (Tidy, 2013). In the study, three out of four mothers have born their child with advanced maternal age. Moreover, family history is also one of the factors that may contribute to the condition. From the data gathered, three of the families have a history of the condition.

Additionally, one of the key informants thought about children with Down syndrome to have different medical conditions when they get older. The conclusion was made as the key informant observed one of the conditions of a family member who is at her late 30s. From the studies conducted, several medical conditions may arise as an individual with Down syndrome reached older age. Some of the medical conditions include sensory loss (cataracts and keratoconus); conductive hearing loss due to anatomical reasons (ear canals are small which may lead to wax impactions); hypothyroidism; obstructive sleep apnea; osteoarthritis; atlantoaxial instability and cervical spine concerns; osteoporosis; celiac disease; and the more common condition for adults with Down syndrome is early-onset Alzheimer's disease (Moran et. al., 2013).

The key informants strive to understand child's condition through gaining information regarding child's condition. Seeking information could be their way of lessening worries and fears that they experience as they care for their child. Further, this is also a way of preparing themselves for a challenging role that they may handle in raising their child with special needs.

Lived Experiences of Families with Children Diagnosed with Down syndrome

From the subjective statements gathered through unstructured interviews, three themes were found to emerge from the analysis of data: (1) Primary care providers' insights; (2) the family dealing with child's condition; and (3) the child as a family member. The themes were further subdivided into categories describing entirely the lived experiences of families having children with Down syndrome and addressed the research questions established.



Table 2. The main themes and categories of families' lived experiences

Themes	Categories
Primary Care Providers' Insights	Child Child's Condition Experience as a whole Beliefs
The Family Dealing with Child's Condition	Initial Reactions Psycho-behavioral Experiences Family Mechanisms and Interactions Health and Illness Management Caring Experiences Character and capability formation Social Experiences Spiritual Experiences Challenges and issues encountered Coping mechanisms
The Child as a family member	Child's worth Looking through the child's future Effects to family

Primary Care Providers' Insights

In understanding the families' lived experiences, the insights families have in the totality of their experience are valuable to be explored. From the findings of the study, it has been observed that the families distinctively have insights to the child, the child's condition, experience as a whole and beliefs.

In relation to the insights of key informants to their child with special needs, they have drawn meaningful ways from their child. Two of the key informants verbalized that they see their child not as a burden to the family but rather someone who seems light to be carried. It was like even challenges face them, a solution is always there ready to respond to their needs.

Another key informant verbalized that the child is someone that neutralizes challenging life situations the family faces. They see their child uniquely as someone that makes situation lighter. As the key informant shared, prior to child's birth, their family faces several family issues, but all of those negative circumstances were felt to somehow gone when the child was born. The key informant stated,

"There are a lot of problems, but now that he came into our family, it was like all of those problems were gone, it was like things became easy even if he has a condition, unlike before, when he is not yet with us, there are a lot of problems."

Additionally, beyond the child's condition, they perceive their child in many positive ways. The child is realized as a gift from God, a gift to strengthen their family, their marital relationship and most especially their faith with God. However, even one of the key informants has positive perception, the key informant also considers the child as a sacrifice and a reminder of faith.

For the child's condition, one of the key informants described it as unforeseen. This could have been because the mothers during their prenatal period were found out not having their regular prenatal check-ups and some were not able to attend one. Addition to this, the health services available in the public setting are limited when it comes to identifying genetic problems. For the other key informants, they perceive their child as needing assistance. The key informants have understood well that nothing can be done and that child's condition cannot be changed; hopelessness can be felt from their statements. On the other hand, though hopelessness is seen to be present, all of the key informants expressed accepting God's gift and realization of contentment through time was presented.

"I am rather thankful to have him at least we will have someone to accompany us when we get old. I am thankful to God that at least he is able to play unlike other kids who suffer from difficult conditions some are bed ridden. The only problem with him is with the developmental delays that he experience."



Looking at their experience as a whole, one of the key informants described it as a puzzling experience and still in search of its meaning. However, for other key informants, the experience was defined as a matter of chance, a life's reality. Others see the experience as a test of character and a way to sacrifice. While for some, the experience of having a child with Down syndrome was as tolerable and fulfilling.

Lastly, beliefs of the key informants were also presented. The beliefs possessed by the key informants govern the way they think and behave in response to such circumstances. From the statements made by one of the key informants, their understanding in relation to their child's behavior was influenced by external factors (folkloric beliefs) and as a product of imitation. As the key informant shared,

"When it is full moon, it was like he is more ill-tempered, just a little thing that he disliked, he will get mad. Every end of the month he behaves like that, just like what happened with our laptop, it happened 27th of January then last week, he threw two phones....It all started when he watched a television show, it was in discovery channel, a show where old appliances were intentionally destroyed, I guess that is what he saw, he saw the TV and laptop being wrecked...he imitated it that is why when he saw our laptop, he dropped it."

For another key informant, when it comes to giving care for their child, they believe that it must be doubled. They also give emphasis on treating their child indifferently. They wanted their child to feel that the treatment he receives is the same treatment given to his siblings. The key informants also believe that the quality of care that they give is incomparable and parent's care is unique.

Also, just like any other child, the parents who have a child with Down syndrome want to provide good education as they consider education as the only endowment. Another key informant shared about his spiritual beliefs in life and in dealing with life situations. When handling difficult circumstances, they hold on to their faith and see prayer as their only solution. As verbalized by the key informant,

The Family Dealing with Child's Condition

The family has shared a collage of experiences starting from the child was born and the child's growing years. The categories under this theme were: initial reactions, psycho-behavioral experiences, family mechanisms and interactions, caring experiences, health and illness management, character and capability formation, challenges and issues encountered, social experiences, spiritual experiences and coping mechanisms.

When the key informants were asked about what is their initial reaction upon hearing the child's condition, all of the key informants verbalized that they have felt no reaction. As the interview goes on, the researcher found out several negative emotions experienced by the key informants. The first key informant verbalized that silence was her response upon hearing the child's condition. The same reaction was also seen with other family members when the information was passed onto them. The second key informant verbalized being in a state of disbelief leading to ignoring the given fact. And when the key informant finally confirmed child's condition based on the physical characteristics observed, the key informant felt worried, thinking about the child's future. For the third key informant, being in an incomprehensible state is the initial reaction. Also, disbelief was also verbalized, feelings of sadness, fear of losing the child and felt pity for their child were noted. And with the fourth key informant, feelings of sadness was also verbalized, felt worried for the part of her husband, and being ambivalent were the emotions expressed by the key informant.

As they deal with the present, the key informants encounter psycho-behavioral experiences. Worries and fears are the emotions consistently expressed by all of the key informants and are seen to be present at all children's life stages. One of the key informants shared,

"I have a lot of worries about his future. I worry about who will take care of him if I would be gone. It is hard to think that (cracky voice) he might be abandoned because as I have observed right now, there are siblings who do not care about him but there are also those who love him.... There's nothing I could do because he already has the condition (tone of voice is sad and low). I just let his siblings understand his condition. I told them that what he only needs is caring because we cannot do anything about it. He can be taught but there is a limitation. I just want him not to be neglected (wiping off the tears in her eyes)."



During the child's early years, especially when the diagnosis was not yet relayed to the key informants, majority have wondered and questions arose as they have observed unusual physical and developmental characteristics of their child. Hopelessness was verbalized by majority of the key informants. Questioning and reflecting among some of the key informants were noted in their effort to understand their current situation. Lastly, majority has expressed a change in emotional state converting negative to positive emotions.

Going through the family mechanisms and interactions, family strategies in caring for their child have emerged. Creating an open communication and sharing of responsibility is present to all families. This was validated during the observations done with each family. Positive and negative sibling relationships were described by some of the key informants. Guiding children, setting priorities, considers child's welfare in decision making, every member has a role to perform, family molded to fit to the situation, initiating an empathic environment and providing equal treatment are some of the ways done by each of the key informants in managing their family.

In providing the caring needs of their child, majority of the key informants have described their child uniquely knowing child's likes and dislikes, needs and capabilities and seeking further information was done by one of the key informants. Every key informant uses recognizing child's characteristics and needs, interventions specific to each child. Caring adjustments, caring given round the clock, dividing time in caring for their child and other responsibilities, indifferent treatment given and taking perseverance were done by all of the key informants as they provide care for their child. One of the key informants verbalized,

"Hmm, the only thing that I can say is that I am really focused with giving attention on him, almost every minute or hour I give him the caring that he needs. I am the one who do the caring specially during the time when my other children were still too young to help me in caring for their brother. I cannot trust his care with anyone... He is always on my mind. If I have to go to the market, I leave him under his father's care but I feel like I always have to be in a hurry (laughs)."

Having communication difficulties, two of the key informants understand their child through nonverbal cues. Also, behavioral problems were noted to two families. One of the key informants verbalized that some of the family members experiences losing patience while attending to their child and for her part extending it with deep understanding for her child is shown.

All of the key informants believed that parents are the sole care provider of their child with special needs and takes the obligation fully. Other roles such as comforting and protecting child were also described by some of the key informants. Performing this vast role, one of the key informants verbalized being overwhelmed by the responsibilities. However, one of the key informants verbalized role development through time.

During the child's early years, managing child's health is one of the challenges. All of the key informants imparted that they seek medical help to address child's health needs. Some have gained interventions such as anticipation of future needs and illness prevention. Moreover, majority of the key informants were inclined at making other ways in managing child's health which includes folkloric practices, providing self-directed interventions and resorting to alternatives.

The key informants as parents are considered their first educators. In managing child's behavior, behavioral management strategy was employed by all of the key informants. At times when the child behaves inappropriately, the key informants address the situation by correcting their child's behavior at once and afterwards letting their child understand what has been done. Communicating with child is also seen important in his character.

Upholding self-reliance and assistance given were believed by all of the key informants important in child's development. In upholding child's self-reliance, the key informants mentioned about the importance of letting their child feel the appreciation with their simple accomplishments. In encouraging child's autonomy, all of the key informants always make sure to aid their child. Because the key informants have known about the child's capabilities and limitations, certain activities are chosen that they can entrust to the child fully while for some tasks, assistance is given. In order for the child to be a capable and independent individual in the future, they train their child follow simple instructions. The key informants develop among their children the value of being industrious and responsible individual.



Addressing child's learning needs was also provided by two of the key informants. Additional to addressing child's learning needs, one of the key informants look for specialized educational programs, Communicating with child and exposes child to the world is the key informants' way to establish social capabilities of their child. Inculcating moral and spiritual values were included in molding child's character. Further, letting child learn to adopt, showing appreciation and parents as role model are other means in developing child's personality.

With the social experiences, social support and community referring to child as a "lucky charm" was expressed by all of the key informants. For one of the key informants, she understands it as people's way of alleviating her feelings.

"It is okay with me, I just let them say "he is a lucky charm", hmm, when he came into our lives, those are the words that I hear from them, all of them refers to him as "good luck", but maybe they say he is a 'lucky charm' because if they say the other way around, it will hurt my feelings as a mother."

Addition to this, the community where they live in takes a great part as they deal with their child and the condition. Social support from individuals and groups are evident in different aspects; financially, intellectually and emotionally. Professionals in health and education have provided the key informants with intellectual and emotional support. They guided the key informants on how to care for their child with special needs, strategies to employ in maintaining health and promote child's growth and development. The key informants followed the recommendations given by the professionals submissively. Also, individuals dealing with the same condition assisted one of the key informants through providing additional information and guidance, which are based on their experiences.

It was shared by the key informants that the people within their community somehow affect them. The community where the family continuously participates has experienced to feel negatively with the feedbacks given to their child. Different opinion from people regarding child's condition and its cause brought confusion to one of the key informants. Because people gave her situations that may have led to the condition, she became bewildered on knowing what have caused her child's condition. However, the broad understanding shown and appreciation for their child coming from the community produced positive feeling.

Conversely, it can be seen that spiritual aspect helped the families in coping to their situation. Positive spiritual experiences such as holding on to faith, communicating with God, thankful to God and knowing God were noted. On the other hand, one of the key informants asked God about the reason for having experienced the situation.

"I told God to help me in caring for my child. When he gets sick I always pray to God and tell Him "if You are to take him, it's up to you but please help me, see how I take care of him." He gave him to us and I know He will help us how to take care and nurture him." And when he is ill, I tell God, "we cannot overcome this."

As the family deals with their child with special needs, different challenges and issues were encountered. Health challenges, uncontrolled behavior and communication barrier are some challenges encountered with their child. While other challenges such as financial constraints, failure to provide needs, caring limitations, lack of knowledge causing difficulty and sibling rivalry are also continuously encountered.

In dealing with the situation the key informants and their family have utilized several coping mechanisms. These include problem-focused and emotion-focused coping mechanism. Problem focused is used by the key informants for situation needing immediate intervention and are within their capabilities. Key informants have different ways in directly addressing their situation as to the identified needs of their child. Adjustments are done according to child's needs and capabilities. As a family, they cope as one. Every member of the family has a role to perform; everyone is sharing responsibility. Communications within the family, guiding children, and sharing responsibility are some of the problem-focused approaches employed by the family. Moreover, because the key informants understand that old age, illness or death will render them unable to care for their child, they do prepare for their child's future such as financial and capability formation or prepare family members for the continuation of care.

While, emotion-focused are used for situations the key informants believe they cannot modify. The key informants make ways not to address the problems that arises caused by the child's condition but rather the emotions that



they experience as they deal with the situation. They do mind setting and boosting self-trust, holding on to their faith to ask for strength and guidance as they care for their child, ignoring undesirable social experiences and having positive outlook in life.

The Child as a Family Member

As a family member, the key informants define the child in many meaningful ways. They refer to their child as a center of attention, "he should not be neglected," always a baby, most valued member of the family, parent's pride, treating child as a priority, source of strength and happiness. As one of the key informants imparted,

"It was like when he was born all of our attention was poured on him. He needs to be cared more than any of my other children. When he was born we really need to give him an attention because at first he easily gets ill...when he gets outside the house, we follow him immediately, all of his siblings even the youngest they are used to it...at school, his youngest brother was the one who looks after him."

In considering child's future, worries on caring assurance and feelings of uncertainty were verbalized by some of the key informants. Hopes of improvement, achieve independence and have an educated mind are some of the wishes of the key informants. Also as early as now, the key informants start to prepare for the child's future such as setting family responsibility preparedness and financial security. Also, looking through the child's capability to marry, two of the key informants have varied responses. One is open for this possibility while the other is uncertain for their child and does not consider thinking it for now.

With regards to child's effects to families, positive and negative impacts were noted. The key informants perceived the child to positively and negatively affect them personally and the family. Positive effects to personality includes "molded me to be the man I should be," attitudes changed, became family-focused person, became stronger than before, marital relationship strongly bonded, experienced feelings of gladness, and family interacts better. However, negative effects were also verbalized such as limits freedom, provision of family needs abated, tiredness felt and sacrificing own needs. Conversely, interchanged family orientation verbalized by one of the key informants was not expressed as positive or negative effect.

Conclusion

The key informants have presented different beliefs and perceptions separately when it comes to understanding their child, the child's condition and their experience as a whole. The perceptions they have was predisposed by individual characteristics, knowledge base regarding child's condition, social, cultural and spiritual inclinations. Looking through the perceptions, majority of the families portray lack of knowledge regarding child's condition. Due to this reason, the views of the key informants were composed of both a positive and a few negative comprehensions. The views owned by the key informants' influences their caring and coping behaviors with the phenomena.

With regards to the lived experiences of the family, having a child with Down syndrome has considerably influenced across all aspects of the individual or family life of the key informants. The experiences encountered by the key informants can be regarded as a paradoxical journey. The experiences they have had were described as paradoxical in a sense that, at the beginning of their journey, a lot of negative emotions were noted; worries, fears, sadness, hopelessness, questioning God are some of the noted emotions. But as they take on the new and challenging event and continuously coming across the uncertain path, the key informants have realized both positive and negative impressions of having a child with Down syndrome. It also tested their capabilities as parents and as individuals as arising challenges have been discerned. Though, still whirlpool of emotions was unceasingly present even with having to think of the child's future.

But, whatever challenges have been faced, the key informants and the family as a whole seek ways in order to adapt and cope with the experience. It has been noted that, in times of difficulties, and financial constraints make it even harder, the parents make alternative ways, a parent's instinct just to help their child survive and live longer. But, for situations which were perceived as beyond the key informants and families' capabilities, external resources and spiritual faith have greatly helped them cope with the situation.

In attending to the needs of their child, the family members seemed to be united in caring for their child with special needs. Though at times, having the need to adjust and accept on individual differences has to be taken



into consideration. The categories sought comprehensively described the families experience having a child with Down syndrome.

Finally, as a family member, the family considerably values the child. All of the family members give time, attention, love and caring for the child with special needs. They also defined their child as a source of positive feelings such as strength, happiness and pride.

Because looking through the child's future causes uncertainties, some of the key informants already are preparing for it. Some are focused on preparing the child's financial needs in the future while for others caring assurance is the focus. For another key informant, equipping the child with the necessary skills and knowledge is their way to prepare the child to be an independent individual in the future for possibilities that they themselves as parents would be unable to care for their child due to illness, old age or death. Hopes for improvement were also expressed by all of the key informants. On the other hand, the key informants thinking of the child's married life gained different views. Some are open for this possibility and some are uncertain about child's capability to establish such intimate relationship or even establish own family life. While for others, they have not expressed anything about it.

As a member of their family, the child brings some positive and negative impact to the key informants and the family. The child is viewed as a bringer of change to the key informants and to their family while some regarded the child as giving them the boundaries and making sacrifices. But, as a whole, the child is seen as a wonderful blessing, a gift from above.

Recommendations

From the findings of the study, the researcher formulated a model of care called as "Family Empowerment Model (FEM)" for families to assist them in effectively caring for their child. This model also aims at reducing the stress they experience as they deal with the phenomenon, facilitating better coping and adaptation where both the family and the child is believed to be benefited. The model formulated is incorporated with the Hill's ABCX or Family Stress Model and Bowen Family System Theory.

From the data analysis, it was concluded that the negative experiences the family encountered was due to lack of knowledge with the child's condition and with the appropriate approach to use that can be done by the family in helping their child with special needs. And, to empower the family is through providing them the appropriate knowledge and let them realize how they can boost their child's potential and live just like any other typical individual.

The health care providers are seen to be of great help starting from the mother's prenatal diagnosis and as the child grow. The health care providers must include in the mothers prenatal visit the assessment on determining risks for any genetic conditions. For the mothers who are identified at high risk for any genetic disorders, the health care provider should offer to the expectant parents the diagnostic tests available to help the couple have an informed decision. From the time the diagnosis is made during prenatal period, the health care provider must guide them in dealing with a new and challenging situation. Counseling which includes up-to-date knowledge on the child's condition can already be offered with the couple before the child is born. It is important to assist the couple be in control of the situation and help them with strengthening the different areas that influences the way they think and act with the situation. This may include helping the couple have a positive perception, attitude and emotion towards their child. Doing these interventions especially before the child is born is immensely helpful for the couple so that they could already begin in setting plans and goals for their child especially providing their child with early intervention programs. In addressing the child's learning needs, special educators are the ones that could help the couple how to effectively assist their growing child. They are the ones to guide the couple especially in handling difficult situations that may arise with their child such as managing behavioral problems and addressing language delay that their child encounters. Both the health care provider and special educators could provide a strong support system to the family. The interventions that will be done with the help of the professionals could lead to positive and empowered behavioral outcome.





Figure 1. Model of Care

Health Care Facilities

The researcher recommends the use of the model of care devised in assisting families with a child having special needs. A supportive counseling must be established beginning from the confirmation of the diagnosis and assisting the families all throughout the experience. The counseling must also be sensitive enough to address arising emotions that may be experienced by the family members in dealing with their child with special needs. Up-to-date printed materials can also be provided to the families to assist them in caring for their child.

Department of Health

Based from the findings, early detection and diagnosis with an early counseling offered to couples can already aid in helping the families effectively cope up with the child's condition. Also, through this counseling can already be offered to the couple and early intervention for their child can already be established from the time the child is born. Early intervention for the child can help him in altering developmental delays.

Currently, screening and diagnostic tests for genetic disorders and genetic counseling for couples were not yet widely made accessible and available to all areas in the Philippine setting. The researcher recommends that the health care providers especially in the community setting be well oriented about assessing pregnant mothers at high risk for genetic disorders and the screening and diagnostic tests available and should be informed to target individuals. The researcher also would like to recommend that the DOH approve the model of care devised and be integrated in the Philippine health care setting. Furthermore, program focusing on genetic disorders is recommended if possible be included in the maternal program of the department wherein it will be made available to the community of varying socioeconomic status.

Health Care Providers

The researcher recommends that health care providers should keep themselves updated with research breakthrough regarding families and children with special needs.

Department of Education

The researcher recommends that additional special educator be added to be in service for children with special needs specifically in the municipality of Polangui. Currently, the municipality has only one special educator. The SPED teacher caters children of varying disabilities, hearing and visually impaired and children with learning disabilities. The special education is also offered only in one school catering the special population of the municipality. From the interview done with the SPED teacher, she honestly expressed that her skills and expertise is not enough to handle children with learning disabilities. The researcher additionally recommends that the department provide trainings that will further enhance the SPED teacher's capability of handling children with special needs.

Local Government Unit

For the local government unit, the researcher suggests that the local department strengthen their support for the special population. This is through creating programs that will address the physical, intellectual, emotional and social needs of individuals and families of the population with special needs.

Recommendations for Future Research

For the future researchers, the researcher suggests to focus on areas, which were limited to the current study and are not tackled that are deemed significant in the study.



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Optimum Effectiveness of Ionic Copper Concentrate (ICC) Against *Ralstonia solanacearum* in *Musa sapientum* In Vivo Test

Abstract

This study aimed to determine the efficacy of Ionic Copper Concentrate (ICC) against *Ralstonia solanacearum* by injection method the in vivo test. This research was carried out in Randomized Complete Block Design (RCBD). The efficacy evaluation in vivo revealed that all test rates of ICC as eradicated treatments afforded significant control of *R. solanacearum* causing Moko disease of banana. Efficacy in vivo evaluation even at ICC test rate at 25.0, 30.0 and 40.0 ml/L H₂O, a significant degree of control was exerted against the test pathogen indicated by the effective. The rate of 25.0, 30.0 and 40.0 ml/LH₂O of the ICC was found to be the optimum rates effective against the target pathogen and the most cost-effective treatment, with the least total production cost of P42,622.00 incurred compared to the use of (Beloran) chemical check with a total production cost of P44,200.00 per hectare (lakatan) banana production.

Keywords: Ionic Copper Concentrate, *Musa sapientum*, Moko Disease, *Ralstonia solanacearum*

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Introduction

Banana *Musa sapientum* is one of the dollar earner commodity worldwide. Economic sustainability on some other country depends on the production of banana. Moko disease caused by *Ralstonia solanacearum* is one of the problem encountered in banana plantation, it can cause a total damaged estimated up to 90 percent if it is not resolved. EnvirEau Technologies (2005) believe Ionic copper in ICC reacts with sulfur-containing amino acids in the protein used for photosynthesis. As a result, photosynthesis is blocked, leading to cell lies and death. If the cell manages to live for a short time, the reproduction process is hampered by the presence of copper ions and the spread of the microorganism is stopped. This study claimed that most undesirable bacteria are killed at low copper ion concentrations, whereas important beneficial bacteria, being more tolerant of copper, will survive. The same low copper concentration is known to repel or kill many insects such as slugs, red spider, various flies, mosquitoes and other insects that can harm human, plants and animals (Copper.org.2007).

Buddenhagen, Sequeira, and Kelman, (1962) and Janse, (2004) reported that race 1 occurs in tropical areas all over the world and attacks tobacco. According to Wenneker et al., (1999) some solanaceous weeds like *Solanum nigrum* and *Solanum dulcamara* and a number of non-solanaceous weed hosts have also been found to harbor race 3 infections Pradhanang, (2000) and Strider, Jones and Haygood, (1981). Moreover, Lancashire (2005) reported that copper compounds have their most extensive use in Agriculture. Since the discovery of their toxicity to certain insects, fungi, and algae these compounds used as insecticides, fungicides and to prevent algal development in potable water reservoirs. They are used in the control of animal and plant diseases. Fertilizers are also often supplemented with copper compounds, e.g. copper sulfate, in order to increase soil fertility and thus boost crop growth Lancashire (2005).

The concept was that the ICC can suppress a certain bacteria; however, the researcher tested the Ionic Copper Concentrate in a specific pathogen the *R. solanacearum* to test the efficacy of ICC by determining the Days to symptom appearance, Percentage infection, Corm discoloration, Vascular discoloration. However, Copper can be found in many kinds of food, in drinking water and air. Because of that absorb eminent quantities of copper each day by eating, drinking and breathing. The absorption of copper is necessary because copper is a trace element that is essential for human health. Although humans can handle proportionally large concentrations of copper, too much copper can still cause eminent health problems. Copper concentrations in air are usually quite low so that exposure to copper through breathing is negligible. But people that live near smelters that process copper ore into metal do experience this kind of exposure.

The study aimed to compare the test treatments and to determine the optimum rate and to determine the effectiveness of eight levels of the ICC against *R. solanacearum* Smith et al (1995) causing bacterial wilt compared to synthetic chemical (Beloran) and organic chemical x-tech.

Framework of the Study

Integrated disease management was a fundamental information on loss potential and pathogen biology, ecology, and epidemiology and applying the basic concepts of plant disease management. The principles of plant disease management should always based on the integration of basic concepts such as avoidance, exclusion, eradication, protection, resistance, and therapy. Adoption of Integrated Pest (Disease) Management against the diseases encountered.

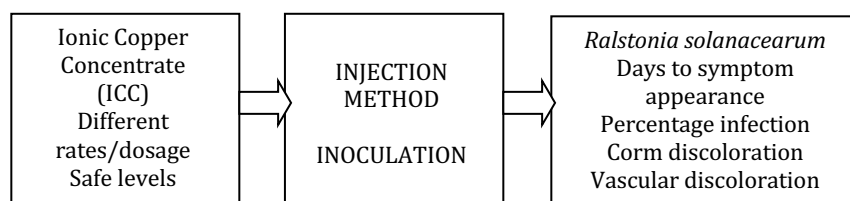


Figure 1. Conceptual Framework of the study.

Materials and Methods

Experimental Design

The experiment were arranged in a Randomized Completely Block Design (RCBD) with Eleven treatments replicated four times. The following were the treatments tested *in vivo*.



Treatments (ICC)	Rate of Application (ml/L of H ₂ O)
T ₁ – Untreated Control (SDW)	-
T ₂ – ICC	5.0
T ₃ – ICC	10.0
T ₄ – ICC	15.0
T ₅ – ICC	20.0
T ₆ – ICC	25.0
T ₇ – ICC	30.0
T ₈ – ICC	35.0
T ₉ – ICC	40.0
T ₁₀ – Beloran (chemical check)	3.0
T ₁₁ – X- tekh (organic check)	3.0

Preparation and Sterilization of Potting Medium

The soil medium was garden soil and sterilized by baking method for one hour at 80°C and placed in the polyethylene bag (14"x14").

Management of Test Plants

Two- month old tissue cultured Lakatan bananas have been carefully transplanted to the prepared sterilized, soil medium. Standard cultural management was employed.

Inoculation of the Pathogen

Experimental plants were inoculated one week before treatment application. Wounding the roots of the test plants does this and drenching the soil with 20 ml bacterial suspension per plant calibrated at 10⁶ cells/ml.

Application of Test Treatments

The eradivative method of application of test treatments was done three (3) weeks after transplanting. The application was applied by injection method at the pseudostem base of the plant with 30ml per plant/treatment at 7-10 days interval at six cycles of application.

Data Gathered

a. Days to symptom appearance (DSA)

Daily observation on occurrence of the wilt symptom was done. The number of days of symptom appearance was recorded.

b. Percentage infection (PI)

This had been monitored daily for the occurrence of wilts symptoms on test plants. Infection was confirmed by bacterial ooze induction. The following formula was used to compute for the PI of Moko disease:

$$PI = \frac{\text{No. of infected plants}}{\text{Total no. of plant sample}} \times 100$$

c. Severity infection based on vascular discoloration (VD).

Determined based on the percentage area of vascular discoloration (VD) measured in centimeter (cm) of longitudinally sectioned pseudostems of banana test plants using the following arbitrary scale (Mama and Jover, 2003)

Scale	Vascular Discoloration (%)
0	Pseudostem completely clean, no vascular discoloration
1	1 – 10% of the pseudostem with VD
3	11 – 20% of the pseudostem with VD
5	21 – 30% of the pseudostem with VD
7	31 – 40% of the pseudostem with VD
9	41% – and above of the pseudostem with VD



Based on the arbitrary scale percentage disease index (%DI) or severity infection was computed as follows:

$$\% DI (VD) = \frac{0n_0 + 1n_1 + 3n_3 + 5n_5 + 7n_7 + 9n_9}{9N} \times 100$$

Where:

N= refers to the total number of plants sampled

9= refers to the highest rating scale

0n₀ +9n₉= refers to the number of plants showing scale of 0,1, 3, 5, 7 and 9, respectively.

d. Severity infection based on the intensity of discoloration (ID)

The data were gathered at the termination of the study. Sample plants were cut lengthwise, and the severity infection was assessed based on the ID of the vascular bundles using the arbitrary scale of Mama and Jover (2003)

Scale	Description
0	No discoloration (ND)
1	Light Brown (LB) discoloration of vascular bundles
2	Moderate brown (MB) discoloration of vascular bundles
3	Dark Brown (DB) discoloration of vascular bundles

Based on the arbitrary rating scale, %DI (ID) was computed as follows:

$$\% (DI) ID = \frac{0n_0 + 1n_1 + 2n_2 + 3n_3}{3N} \times 100$$

Where:

0n₀ + 1n₁ + ... 3n₃ refer to the number of plants showing the scale of 0, 1, 2, and 3, respectively.

N – refers to the total number of test plants

3 – refers to the highest rating scale

e. Severity infection based on corm discoloration (CD)

Based on the following arbitrary rating scale of Magsipoc and Evangelista (2009)

Scale	Degree of discoloration
0	Corm completely clean, no discoloration
1	Isolation points of discoloration of vascular tissue.
2	Discoloration up to one third of vascular tissue.
3	Discoloration between one-third to two third of vascular discoloration.
4	Discoloration of greater than two third of vascular tissue.
5	Total discoloration of vascular tissue.

Percentage severity infection (%DI) based on corm discoloration (CD) was computed using the following:

$$\% DI (CD) = \frac{0n_0 + 1n_1 + 2n_2 + 3n_3 + 4n_4 + 5n_5}{5N_5} \times 100$$

Where:

N= refers to the total number of plants sampled

5= refers to the highest rating scale

0n₀ +5n₅= refers to the number of plant showing scale of 0, 1, 3, 4, and 5, respectively.

f. Percentage Degree of Control (%DC)



The % DC based on % DI (VD), % DI (VD) and % DI (ID) was computed using the following formula below:

$$\%DC = \frac{\%DI \text{ of untreated plants} - \%DI \text{ of treated plants}}{\%DI \text{ of untreated plants}} \times 100$$

Efficacy of treatments

This was based on the following arbitrary rating scale (Mama and Jover, 2003).

Scale	DC (%)	Description
1	1-20	Not Effective (NE)
2	21-40	Less Effective (LE)
3	41-60	Moderately Effective (ME)
4	61-80	Effective (E)
5	81-100	Very Effective (VE)

g. Cost –benefit analysis

The cost of production per hectare of Lakatan banana was assessed based on the treatment costs, labor expenses and other related expenditures in the conduct of the study.

Result and Discussion

Days to Symptom Appearance (DSA)

Table 1. present the DSA of Moko disease of banana as affected by different rates of eradivative application of ICC.

The untreated control plants showed the earliest BW infection with a mean of 33.65 DAI, significantly shorter than all ICC-treated plants with means ranging from 36.40 to 46.40 days as well as on (x-tekh) organic check – and (Beloran) chemical check – treated plants with respective means of 37.10 and 37.45 DAI. Of the eight test rates of ICC, however, the rate of 30 ml/ L H₂O exhibited significantly longer DSA at 46.40 days compared to all other test treatments.

Table 1. Mean days to symptom appearance (DSA), percentage infection (PI), percentage severity infection (% DI), and percentage degree of control (% DC) and degree of effectiveness (DE) of Moko disease of banana caused by *R. solanacearum* based on area of CD, VD and ID as influenced by eight ICC levels with their corresponding degree of efficacy (DE) after six (6) cycles of eradivative application.

ICC (ml/ L H ₂ O)	DSA ^{1/} (days)	PI ^{1/} (%)	CORM DISCOLORATION			VASCULAR DISCOLORATION			INTENSITY DISCOLORATION		
			DI ^{1/} (%)	DC ^{1/} (%)	DE ^{2/}	DI ^{1/} (%)	DC ^{1/} (%)	DE ^{2/}	DI ^{1/} (%)	DC ^{1/} (%)	DE ^{2/}
5.0	38.95 ^c	60.00 ^{bc}	28.00 ^{bc}	63.00 ^{ab}	E	18.89 ^{bc}	71.12 ^{bc}	E	43.33 ^{bc}	56.68 ^{cd}	ME
10.0	41.95 ^b	45.00 ^{bc}	27.00 ^{bc}	64.00 ^{ab}	E	13.89 ^{cd}	76.12 ^{ab}	E	35.00 ^{de}	65.00 ^{bc}	E
15.0	37.65 ^d	60.00 ^{bc}	30.00 ^b	61.00 ^{ab}	E	16.11 ^{bc}	73.89 ^{ab}	E	43.33 ^{bc}	56.67 ^{cd}	ME
20.0	37.45 ^d	60.00 ^{bc}	31.00 ^b	60.00 ^b	E	21.11 ^{bc}	67.00 ^{cd}	E	48.33 ^{bc}	51.67 ^{de}	ME
25.0	41.45 ^b	45.00 ^{bc}	24.00 ^{bc}	67.00 ^{ab}	E	12.78 ^{cd}	77.26 ^{ab}	E	31.67 ^e	68.34 ^b	E
30.0	46.40 ^a	40.00 ^c	22.00 ^c	69.00 ^a	E	10.56 ^d	79.45 ^a	E	21.67 ^f	78.33 ^a	E
35.0	36.80 ^{ef}	60.00 ^{bc}	28.00 ^{bc}	63.00 ^{ab}	E	19.45 ^{bc}	70.56 ^{bc}	E	45.00 ^{bc}	60.00 ^{cd}	ME
40.0	36.40 ^f	50.00 ^{bc}	26.00 ^{bc}	65.00 ^{ab}	E	14.45 ^{cd}	75.56 ^{ab}	E	38.33 ^{cd}	61.67 ^{bc}	E
X-tekh (organic check)	37.10 ^{de}	65.00 ^b	30.00 ^b	61.00 ^{ab}	E	23.33 ^b	66.67 ^d	E	48.34 ^{bc}	51.67 ^{de}	ME
Beloran (chemical check)	37.45 ^d	60.00 ^{bc}	27.00 ^{bc}	64.00 ^{ab}	E	18.89 ^{bc}	71.11 ^{bc}	E	43.33 ^b	56.68 ^{cd}	ME
Untreated control (SDW)	33.65 ^g	100.0 ^a	91.00 ^a	-	-	90.00 ^a	-	-	100.0 ^a	-	-

^{One/} Means with common letter superscripts in a row are not significantly different at the 1% level of DMRT.

^{Two/} Degree of Efficacy: E – effective; ME – moderately effective; LE – less effective; NE – not effective



Percentage Infection

Highly significant differences between treatments were obtained in terms of percentage of Moko infection (PI) as shown in Table 1, column 3.

All the test plants applied with the eight ICC test rates with means ranging from 40.00% to 60.00% showed PIs comparable to (Beloran)– and (X Tekh) – rated plants with respective means of 60.00% and 65.00%. Untreated control plants (SDW) gave the highest mean PI of 100.00%.

The result implies that applications of all ICC test treatments significantly reduced percentage infection of BW when compared to the untreated control, and had a similar effect with both the (X-tekh) and (Beloran). This observation corroborates the report of EnvirEau Technologies (2005) that the presence of copper ions hampered the cell reproduction process, hence; it stopped the spread of the microorganism.

DI and DC (CD)

As shown in Table 1, column 4, %DI of Moko wilt based on %DI of CD of sample plants revealed highly significant differences among treatment means. It was observed that ICC test rates – treated plants with means ranging from 22.00% to 31.00% had % DI comparable to (X-tekh) and (Beloran) -treated plants with means of 30.00% and 27.00%, respectively. Untreated control plants showed the highest DI of 91.00%, significantly higher than in all other treatments.

In terms of % DC (CD) as shown in Table 1, column 5 results revealed no significant difference among treatment means indicating comparable %DI means of plants treated with eight (8) ICC test rates and on plants treated with both the organic and chemical check. Consequently, % DC (CD) in all test treatments was likewise comparable with each other, exerting effective (E) action against the target pathogen.

The aforementioned findings imply that the similar % DI based on CD on plants applied to the eight ICC test rates exerted effective (E) bactericidal actions against *R. solanacearum* comparable to the effects of (X-tekh) and (Beloran) applications. These findings lend support to the observation made by Copper Org. (2007) which reported that copper compounds can control plant diseases.

DI and DC (VD)

Results on the field evaluation of % DI based on the VD of test plants showed highly significant differences among treatment means. Plants applied with ICC test rate of 30.0 ml/L H₂O gave numerically the lowest % DI of 10.56 %, comparable to plants treated with ICC at 10.0ml, 25.0 and 40.0 ml/L H₂O with respective means of 13.89 %, 12.78 % and 14.45 % which were significantly lower compared to the rest of ICC test treatments including the organic and chemical check. The untreated control plants showed significantly the highest % DI of 90.00.

This result implies that the application of all the ICC test rates exerted similar effective (E) actions with the standard disinfectant (Beloran) used against the target pathogen. Moreover, based on this parameter it was found that even at the least rate of 5.0 ml/ L H₂O of ICC the optimum level to effect a significant degree of control against Moko wilt was attained. This finding lends support to the report of Borak (1999) about the effects of ICC as a disinfectant to control various microorganisms such as bacteria with its “seek and kill” nature.

DI and DC (ID)

Table 1, column 11 present highly significant differences among treatment means based on % DI (ID). A similar trend was likewise observed. It was found that all ICC-, (X-tekh) and (Beloran) treated plants exhibited significantly lower % DIs with means ranging from 21.67% to 48.33% compared to the untreated control plants that showed the highest % DI mean of 100.00%.

Consequently, comparable % DC means were likewise observed among test treatments with means ranging from 51.67 to 78.33% exerting moderately effective (ME) to effective (E) action against the test pathogen.

The results imply that application of ICC test rates exerted moderately effective (ME) to effective (E) eradication actions against the target pathogen affording comparable effects with the application of the organic and chemical checks. This supports the findings of Borak (1999) that cupric ions disrupt the metabolic processes and replication of microorganisms resulting in a decrease in their number and pathogenic effects.



DI vs. DC

It illustrates an indirect relationship between % DI and % DC of test treatments based on CD, VD, and ID. Increased % DI on ICC-treated plants resulted in a subsequently decreased % DC, by all the test treatments against Moko wilt.

It further shows that the increasing levels of ICC did not have a direct relationship to an increased efficacy of treatments as shown by the data, pursuing an irregular pattern, indicating that there are several points at which efficacy of treatment peaks and dips with the gradual increase of rate of ICC application. A significant degree of control and effectiveness based on CD, VD, ID has been shown that even at the lowest test rate of ICC of 5.0 ml/LH₂O, a significant degree of control has already been attained.

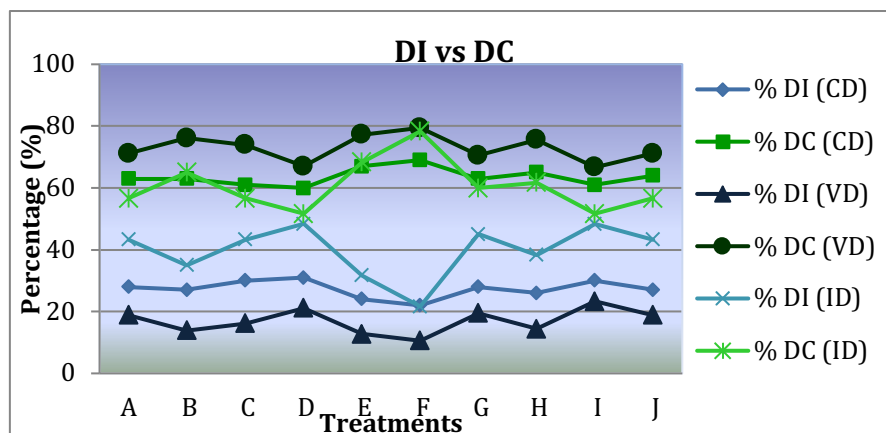


Figure 2. Relationship of % DI and % DC based on CD, VD, and ID as affected by the application of different ICC test rates.

Legend:

A- ICC (5.0 ml/ L H₂O) F- ICC (30.0 ml/ L H₂O) I- X-tekh (3.0 ml/L H₂O)
 B- ICC (10.0 ml/ L H₂O) E- ICC (25.0 ml/ L H₂O) J- Beloran (3.0 ml/LH₂O)
 C- ICC (15.0 ml/ L H₂O) G- ICC (35.0 ml/ L H₂O)
 D- ICC (20.0 ml/ L H₂O) H- ICC (40.0 ml/ L H₂O)

Cost Benefit Analysis

This indicates that the use of the optimum level of the ICC (25.0 ml/ L H₂O) in managing the disease is not only economical but also serves as a healthier management option compared to the alarming hazards posed by the use of synthetic bactericides.

Conclusion

In conclusion, of the eight ICC test rates, the rate of 25.0 ml/LH₂O was found to be the optimum rate that could provide significant control of Moko disease of banana. It was demonstrated at this level of ICC that significant effective (E) action, indicative of the anti-bactericidal action of ICC against *R. solanacearum* causing Moko disease of banana. Moreover, it is also the most economical treatment for Moko disease management for a hectare of Lakatan banana production. ICC other than being an organic-based product it is also a healthy option or alternative since it is effective, environment-people-friendly control agent against Moko, an economically important disease affecting the banana industry.

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Conditional Cash Transfer of DSWD: The Voice of Student Beneficiaries

Abstract

The principal aim of paper was to find out the feedbacks and experiences of student beneficiaries on the conditional cash transfer of the DSWD as a poverty alleviation strategy of the Philippine government, how do the students coped with the challenges they have experienced from the program and solicited their insights about the cash transfer. The participants of this study were the college and high school students of the Municipality of Maragusan. The research methodology used in this study was qualitative phenomenological approach. Data triangulation is also used in this study where accounts are collected from different informants. The first research question was all about the feedbacks and experiences of student grantees, which generated four emerging themes, namely: feeling of gratitude, sense of pride, extended monetary assistance and feeling of discontentment. Coping mechanisms of student grantees was the second research question that generated three themes, such as juggling of funds, availing some loans due to delay of release and wise spending. Further, increasing the budget for beneficiaries, clear policy for selection of grantees and parent dependency were the three themes that emerged under the third research question.

Keywords: 4Ps, student beneficiaries, poverty alleviation, conditional cash transfer (CCT), Philippines

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Introduction

Perhaps the most valid generalizations about the poor is that they are disproportionately located in rural areas, that they primarily engaged in agriculture activities, they are more likely to be women, children and adult males (usually high school and college students) and often concentrated among minority groups. It is interesting to note, in the light of rural concentration of absolute poverty that the largest share of least developed countries' expenditures have been directed toward the relatively affluent modern manufacturing and commercial sectors. In view of the disproportionate number of poor in the countryside, any policy designed to alleviate poverty necessitates to be directed to a large extent toward rural development and agricultural sector (Todaro, 2009).

In the past years, Bolsa Familia, Brazil's conditional cash transfer program, has been a stunning success and wildly popular. It was expanded in 2003, and 12.4 million households are now enrolled. Brazil has made huge strides in poverty reduction and the program has played a big part, however, many of its critics worried about the imbalance between rural and urban benefits. Bolsa Familia does seem to have a rural bias. Rural poverty is great in Brazil but even so, the program's incidence in rural areas is high: 41% of rural households were enrolled in 2006, against 17% of urban ones. In addition, the program affects the structure of households more than in the countryside. Family benefit goes to the head of a household (almost always the mother). For instance, in densely populated areas, housing is expensive, and where a young woman is likely to stay with her mother after she has her own child, the new benefit still goes to the head of the household. It may, some observers fear, produce a sort of double dependency, on family grant and on family matriarch. Rural Brazil, with its malnutrition and absence of clean water and clinics, is an area of old poverty and Bolsa Família has been wonderfully effective in fighting it. But many of the problems of fast-growing cities, particularly in developing countries, are those of new poverty and nobody, including the designers of Bolsa Família, has a magic bullet for those (Eldorado, 2010).

In the Philippines, 4Ps (Pantawid Pamilya Pilipino Program) is widely known to be the lynchpin of the government's anti-poverty efforts. The program has been mired in controversy amid concerns that 4Ps could be vulnerable to corruption and partisan politics. An expert even warned that the program could be used for vote-buying during the 2013 mid-term elections. In November 2012, the Commission on Audit (COA) released a report that found critical problems in the implementation of the program, including a decline in beneficiaries in 2011, billions in unaccounted disbursements, deficient supervision in household registration and questionable use of funds. A COA-conducted survey also found that not all beneficiaries were really poor, yet were included in the program (Liao, 2013).

In the local context, Maragusan, in particular, this poverty alleviation strategy is thought to be a "dole-out" program of the government by several people. Further, the researcher observed that some locals are criticizing the size of the allocations budgeted for the 4Ps and in most instances, the funds received by the recipients have been used for buying alcoholic beverages, cigars, and usually used to finance small scale events that occur especially when the cash transfer is done. For other instances, parents used the cash intended for education and health to meet other unrelated immediate needs such as paying short term loans to neighbors or even to micro lenders. Thus, it is in this premise that the researcher is prompted to conduct an investigation regarding this concern to further solicit the feedbacks and opinions of student beneficiaries.

Purpose of the Study

The primary purpose of this phenomenological study was to describe the central concerns/issues of the student beneficiaries regarding the conditional cash transfer program of DSWD in the Municipality of Maragusan. Hence, the informants of this study were interviewed about the challenges and their experiences from the program. The implementation of the conditional cash transfer program has brought several issues and concerns, as for the student beneficiaries, these concerns ranges from the delay of payments to the spending pattern of their parents. An essential part of this study was to determine how the students coped with the challenges they have encountered from the conditional cash transfer of DSWD.

The most important part of this paper determines the insights of the student beneficiaries regarding the extent of the services provided by the DSWD as the lead implementer of conditional cash transfer in the Philippines and to solicit feedbacks on how the department could deliver a more satisfactory, efficient and effective services to the constituents.

Further, this study aims to find out whether the cash assistance provided by the government is really spent for its intended purpose such as used to meet the financial obligations at school as one of the requirements or



conditions of the program. Generally, this study was conducted to understand, analyze, and document the experiences and insights of the student beneficiaries about the program.

Theoretical Lens

This study was anchored on the Senate Bill 92 authored by Senator Miriam Defensor-Santiago, otherwise known as “Pantawid Pamilyang Pilipino Program Act of 2010”. This act aims to reduce poverty and promote human capital development through the creation of a national conditional fund transfer program. The Pantawid Pamilyang Pilipino Program (4Ps) through the Department of Social Welfare and Development (DSWD) grants conditional cash subsidy to the poorest household in the country to improve quality of life and education with its dual objective: social assistance and social development.

This study is also anchored on the Bolsa Família Program (BFP) of Brazil which was created in October 2003. The program provides transfers ranging from (US\$7-45) per month to poor families. Like other conditional cash transfers (CCTs), the BFP seeks to help (a) reduce current poverty and inequality, by providing a minimum level of income for extremely poor families; and (b) break the inter-generational transmission of poverty by conditioning these transfers on beneficiary compliance with human capital requirements (school attendance, vaccines, pre-natal visits). To date, the BFP has achieved some important efficiency gains and is showing exceptional targeting results, with 73% of transfers going to the poorest quintile and 94% going to the poorest two quintiles. Furthermore, studies have shown that the BFP played a significant role in the recent reduction in income inequality, which in turn has been instrumental in reducing extreme poverty (Lindert, 2007).

Research Questions

1. What are the feedbacks and experiences of student beneficiaries on the conditional cash transfer program?
2. How do the beneficiaries cope with the challenges they have encountered from the conditional cash transfer?
3. What are the insights of the beneficiaries about the conditional cash transfer program?

Methodology

The research approach used in this study is a phenomenological qualitative research, which employed two methods: the in-depth interview and focus group discussion. One form of a qualitative research is the phenomenological study. A phenomenological research is a study that attempts to understand people's perception, perspectives and understanding of a particular situation or phenomenon. Phenomenological study is interested with the individual experiences of people. It usually involves long, in-depth interviews with subjects and sometimes researchers will interview the same subject several times to get a full picture of their experience with the phenomenon (Boyd, 2008).

Results And Discussions

Table 1. Feedbacks and Experiences of Student Beneficiaries of Conditional Cash Transfer of DSWD

Emerging Themes	Supporting Statements
Feeling of Gratitude	<p>“Happy since it gives financial assistance, especially”</p> <p>“ Thankful that I availed the assistance”</p> <p>“Thankful that they helped us, though not enough, still, thankful sir”</p> <p>“ I am happy sir, because I received a big help from them”</p> <p>“It helped in my studies sir, since my mother is left to support me after my father died”</p> <p>“Great! Because it helped my studies and at home”</p> <p>“I am thankful that my mother was interviewed then and I am one of the beneficiaries of 4 Ps”</p>
Sense of Pride	<p>“Happy and proud, because among all who were interviewed, I am one of those who qualified”</p> <p>“They (DSWD) conducted a house-to-house interview and I was asked if I still go to school, they also asked my age, and I was lucky enough to reach the age limit of the program.</p> <p>“I have an opportunity to hold money from pantawid which I used to settle my obligations in PTA”</p>
Extended Monetary	<p>“I am able to pay my tuition and projects in school”</p>



Assistance	<p>"It lessens our financial burden, sir"</p> <p>"Meet my obligations in school"</p> <p>"Payment for PTA"</p> <p>"It helped as additional money for our family"</p> <p>"Helped me buy the needed things for school"</p> <p>"Happy because it greatly helped in my schooling"</p> <p>"Financial support for my studies"</p>
Feeling of Discontentment	<p>"Sometimes, sir, there is a delay in the release of cash"</p> <p>"Delayed release; parent leaders are selfish, they only secure those who are related or close to them"</p> <p>"Some deductions sir"</p> <p>"Underpayment of cash assistance sir. Very insufficient. Sometimes, during the release date, the money that we received is not the same amount that we expected"</p>

Table 2. Coping Mechanisms on the Challenges Encountered by the Student Beneficiaries from the Conditional Cash Transfer Program of DSWD

Emerging Themes	Supporting Statements
Juggling of Funds	<p>"The money is spent for my projects, some were given to me. But mom would not give all of it, however, she provided whatever I asked"</p> <p>"Half for food and the other half is for my studies"</p> <p>"My mother divided the amount she received. One half for the school, and one half for our needs at home sir"</p> <p>"For food and my education"</p> <p>"Honestly sir, if my mom received the money, sometimes the amount intended for me was not really given to me since it was used to settle her short term loan. The remaining amount will be used for buying consumer products for our family. Nothing will be left and I can understand because of crisis and we benefited from the amount borrowed by mom"</p> <p>"Actually, there are two of us in the family who are still studying, I and my brother who is studying in (USEP). My brother is not a recipient; however, what we received from 4Ps is divided between me and him. Usually, more of it goes to him"</p>
Avail some loans due to the delay of release	<p>"Sometimes, I asked why there are delays. We were forced to borrow in order to pay for our immediate needs"</p> <p>"...The amount intended for me was not really given since it was used to settle the short term loan of my mom..)"</p> <p>"Sometimes, mom will apply for a short term loan to our neighbor"</p> <p>"Sometimes, mom will borrow money from our neighbor to settle my school obligations, so the proceeds from cash transfer will be used to pay her creditor"</p>
Wise Spending	<p>"They budgeted it for studies and for clothing"</p> <p>"Mom separated the budget for my studies sir and for our shelter"</p> <p>"At times that I do not have projects in school, I let my mom kept the 500 pesos. If I have something to buy, she gave me enough and I am the one who budget it"</p> <p>"They plan it ahead, since I am the number one beneficiary in our family, they also consulted me, that is why I learned how to spend wisely"</p>

Table 3. Insights of the Student Beneficiaries

Emerging Themes	Supporting Statements
Increase the Budget for the Beneficiaries	<p>"I hope they will increase the budget for the students, since it is inadequate and we have a lot to pay for"</p> <p>"I hope they will extend their help those who are in dire need just like us, for the other students to achieve their dreams as well"</p>
Clear Policy for selection of Beneficiaries	<p>"I hope they have to look into the economic situation of the beneficiaries, just like me, we really need help. I also hope sir they will consider our excuses and give the full amount of money intended for us without deductions"</p> <p>"Give more efficient services by avoiding delays"</p> <p>"Monitor if the students are still studying. The program could be transferred to more"</p>



	deserving ones if original beneficiaries no longer spend it accordingly" "Give more attention to the families who need more"
Parent Dependency	"Parents tend to become dependent upon it, but often, they spend it in another need"

Recommendations

The Department of Social Welfare and Development, as a lead agency that implements the 4Ps, conditional cash transfer program in the Philippines must ensure that the dole-out from the government would really reach to the eligible grantees, especially those who are situated in far-flung areas where traditional economy is still practiced. First, the agency should ensure that the targeting system that identifies qualified grantees is effective, efficient and accurate to avoid inclusions of the unqualified grantees and exclusion underprivileged households. To attain this, the department should employ competent and knowledgeable researchers who can truly assess the economic standing of each household in a certain geographic location. Second, a sound schedule of payment should be implemented to prevent perplexity among the student/pantawid beneficiaries; this can be managed by a proper planning and scheduling of the regional/local social welfare offices. Moreover, to monitor whether the beneficiaries complied with the minimum conditions of the cash transfer, an on the spot checking of the students in every month is highly suggested. Since the manpower of the department is not sufficient to evaluate each beneficiary one by one, random interview and evaluation can be a best alternative, also the presence of a Barangay Captain or a Purok leader would be better since they directly know the personal circumstance of the beneficiaries. It is also recommended that the DSWD should explicitly define the rules regarding the deductions incurred by the recipients if they failed to meet the minimum conditions of the program. Finally, a strategic coordination and partnership of 4 known departments of the government, namely: DSWD, DOH, DEPED and LGU (under DILG) can help improve the conditional cash transfer program in the Philippines. These four agencies should collaboratively work together with a unified purpose of achieving the main goal of the conditional cash transfer program which is to reduce poverty in the Philippines

Concluding Remarks

The conditional cash transfer program of DSWD generally branded as 4P's (Pantawid Pamilya Pilipino Program) provided unique opportunity for underprivileged Filipino households. The amount of money they received from the transfer attenuates their basic necessities. The researcher found out that the cash transfer has a significant impact on the well-being of student beneficiaries, this can be seen in their confidence in participating in school related programs, accelerating in periodical exams and quizzes, and decrease the days of being absent in school due to the economic pressures and downturns at home. Indeed, these evidences confirmed that student beneficiaries' lives are quite different compared in the past, that is, at present, they are in less trouble of going to the school for a reason that they do not have food for lunch, sick or do not have something to present in a class activity requiring projects. Like the normal income that came into the purse of household, spending the money from the cash transfer is purely discretionary, the authority and power to spend primarily lies on the prerogative of the budgeting officer of the household, on in most Filipino households, the housewife or the mother. Since the spending is widely flexible, there are times that it is used to settle instant obligations brought by immediate and pressing needs. Indubitably, this poverty alleviation system to combat chronic poverty is one of the good measures to help achieve the millennium goals of the Philippines.

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Submergence Tolerant Rice Varieties, as Adaptation Measures to Flood-Prone Areas Due to Climate Change

Abstract

The food security of more than half the world population depends on the ability of the world to supply and distribute rice. Rice supply depends on global rice production while its distribution depends on the distance from production sites to consumers' residences as well as on transportation systems and infrastructures. The different submergence tolerant rice varieties were planted to determine its characteristics, adaptability and yield performance in flood prone condition as adaptation measures for climate change. A study was carried out in a Randomized Complete Block Design with three treatments replicated three times. Submergence-tolerant rice varieties (Rc 194, Rc 18 (sub 1) and Rc 18 224) were adaptable in flood prone condition as manifested by its yield. The maintenance of high carbohydrate concentration, optimum rates of alcoholic fermentation and energy conservation by maintaining low elongation growth rates during submergence were identified as playing a key role in submergence tolerance in rice.

Keywords: Submergence, Tolerant, flood, adaptability, Climate Change

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Introduction

More than 16 million hectares of rice lands of the world in lowland and deep-water rice areas are unfavorably affected by flooding due to complete submergence. The estimated annual economic loss of this is more than US\$ 600 Million (IRRI, 2006). Rice is the only crop plant adapted to aquatic environments because of its well-developed aerenchyma tissues that facilitate oxygen diffusion through continuous air spaces from shoot to root and avoid anoxia development in roots. However, complete submergence due to frequent flooding can adversely affect plant growth and yield (IRRI, 2006).

Flash flooding, which results in rapid ascending of water levels submergence of rice field for 1-2 weeks. This type of flooding could also occur after sowing in areas where direct seeding is practiced and could result in substantial reduction in stand establishment. On the other hand, deepwater and floating rice where water depth exceeds 100 cm and remains at these depths for several months. Plants may become completely submerged for short periods if flooding is severe. Elongation ability of leaves and internodes are essential to keeping pace with increasing water levels and escape complete submergence. Traditional varieties adapted to these environments are low yielding due to their low-tillering ability, long droopy leaves, and susceptibility to lodging, and poor grain quality. Improved varieties are needed that combine high yield attributes with submergence tolerance and elongation ability. Elongation ability of the coleoptiles of germinating seeds is also considered a desirable trait especially with direct seeding to effect emergence above anaerobic waterlogged soils *change (Nguyen, 2015)*.

Under flash flood, few characters were identified as playing a key role in submergence tolerance in rice, the most critical are: maintenance of high carbohydrate concentration, optimum rates of alcoholic fermentation and energy conservation by maintaining low elongation growth rates during submergence. Protective mechanisms as the upregulation of antioxidant system and low synthesis or sensitivity to ethylene during submergence were also found to be useful *change (Nguyen, 2015)*.

Generally, the study aims to evaluate submergence-tolerant rice varieties as adaptation measures to climate change. Specifically to characterize different submergence rice varieties and evaluate its yield performance.

Adaptability and yield trials of any newly developed varieties/lines are one of the significant activities to be done before recommending these varieties in a large scale planting. Majority of the lowland rice in Agusan del Sur suffers from flooding especially in the months of November to late part of April. The majority of these farms had only two cropping per year, first cropping is prone to flooding when the farmer plant early while second cropping prone to flooding when the harvesting time will fall in the months of November or December.

Conceptual/Theoretical Framework

The study had looked into the possibilities of increasing the number of recommended varieties in the submerge prone areas in Bunawan, Agusan del Sur. This framework presented the evaluation and characterization of different submergence-tolerant varieties. This study aims to evaluate submergence-tolerant rice varieties as adaptation measures to frequent flooding due to climate change. Specifically to agronomically characterize the three submergence rice varieties and evaluate its yield performance under flooding condition.

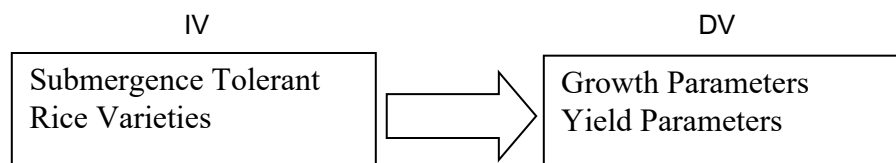


Figure 1. Conceptual Framework of the Study.

Materials and Methods

The different submergence tolerant rice varieties (Rc 194, Rc 18 (sub 1) and Rc 18 224) were planted in a 1,000m square meters to characterize and determine the adaptability. This study was carried out in RCBD with three treatments (varieties) and replicated three times. Commercial production technology for rice was in the study.

To evaluate the field performance of different submergence tolerant rice varieties, the following data were gathered: Plant height, plant productive tiller count per hill, unproductive tiller count per hill, filled grains count, unfilled grains count, crop cut weight and 1,000 seed weight.



All cultural practices were based on the practices used by the farmers, the rice field were submerge during vegetative phase of rice for 3 days.

Results and Discussion

Table 1. Adaptability and yield performance of different submergence tolerant rice varieties in flood prone condition as adaptation measures for climate change, 2014.

Treatments	Plant height (cm)*	Productive tiller counts per hill*	Unproductive tiller count per hill
NSIC Rc 194	89.77 ^b	14.0 ^a	4.0
PSB Rc 18(sub 1)	106.40 ^a	14.0 ^a	2.0
NSIC Rc224	102.77 ^a	12.0 ^b	3.0

Means followed by the same letter are not significantly different at 5% level (DMRT).

Tabular values revealed that different submergence tolerant rice varieties in terms of its yield and yield components such as plant height (cm) and productive tiller count per hill, significant differences were observed while unproductive tiller count per hill were comparable.

The results revealed that different submergence-tolerant varieties have different characteristics, although some characteristics such as filled and unfilled grains count were statistically the same. Some characteristics seem to be genetic in nature; hence different varieties differ from each other.

Table 1. continued

Treatments	Filled Grains count	Unfilled Grains	1,000 seed weight (g)	Yield (t/ha)*
NSIC Rc 194	46	46	27.00	3.52 ^c
PSB Rc 18(sub 1)	40	50	27.55	4.92 ^b
NSIC Rc224	52	60\	27.63	7.53 ^a

Means followed by the same letter are not significantly different at 5% level (DMRT).

Table 2 revealed a significant difference in term of yield among three submergence-tolerant varieties. NSIC Rc224 got the highest yield compared to Rc18 (sub 1) and Rc 194. Higher yield of NSIC Rc 224 is supported with its yield components with numerically higher filled grains count, unfilled grains and 1,000 seed weight compared to Rc 194 and PSB Rc 18 (sub 1), although they are statistically comparable.

The result revealed that even with the presence of the abiotic stresses (flood) meet by submergence-tolerant rice during the vegetative stage, yield were comparable with the rice plants without experiencing a flood. Submergence can affect rice crops at any stage of growth, either short-term (i.e., flash floods) or long-term (stagnant flooding), Ismail, 2006. The chances of survival are extremely low when completely submerged during the crop's vegetative stage. These rice varieties manifest adaptable characteristics in flood prone areas. Farmers can adapt to climate change to some degree by shifting planting dates, choosing varieties with different growth duration, or changing crop rotations. However, many of these coping mechanisms may result in lower yields (Wassmann and Dobermann, 2007).

Plant breeders have discovered that a single gene, the *SUB1* gene, confers resistance to submergence of up to 14 days. Scientists were able to isolate the *SUB1A* gene, derived from an Indian rice variety, and identify the genetic code that controls submergence tolerance. The *SUB1A* gene activates when the plant is submerged, making it dormant and conserves its energy until the floodwater recedes (Ismail, 2015).

Conclusions

Submergence-tolerant rice varieties can be used as adaptation measures for climate change, especially in flood prone condition as manifested with the yield. Data implies that there is greater chances that rice farmers could a good profit even if the unexpected environmental disturbance (flood) will visit the area. The risk for planting rice during those cropping becomes less.



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Effectiveness of Online Course in English Using Content- Based Instruction (CBI)

Abstract

As educators realized that in order to successfully complete an academic task, second language (L2) learners have to master both English as a language form (grammar, vocabulary etc.). There have been different approaches used in the reacquisition of mastery of the English language. One of which is the computer-based instruction. CBI is student-centered. One of its goals is to keep the interest and motives of the students by generating stimulating content instruction and materials, which can be done with the help of computers. The use of computer-based instruction in language learning serves as a tool in facilitating learning. It helps learners to progress on their own pace. This computer-based instruction can be programmed to be interactive and individualized. It can also be in the form of a stand-alone course to enhance or reinforce classroom learning. This kind of interactive learning using online activities to enhance language proficiency helps the teachers to achieve their goals in language learning and at the same time provide comprehensible input from discourse context. Though there are also limitations to this kind of learning but those limitations are expected to be addressed inside the classroom where the teacher is around. With this, research studies about CBI emerged evaluating its effectiveness. This is the second phase of our study, which is an online course using content-based instruction. It is a computer-assisted, interactive platform for English language learning, which targets language skills, such as reading, writing, and grammar using a variety of content-based materials from different sources like science, history, and social sciences. Lessons hosted were planned and developed for 1st year students of BPSU to pave the way in achieving BPSU's mission of making its academic offerings and its students globally competitive. The selection of reading texts used as part of the lesson was carefully written as well as adopted to suit the needs of the students. There were 10 lessons available hosted on the site for the students to try and for the researchers to evaluate the course. This was trialed for a month with the control and experimental group. The researchers would like to make an in depth analysis on the effectiveness of online course in English using content-based instruction.

Keywords: online English, e-learning, content-based instruction

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Introduction

Objectives

1. Identify the problems that students encountered before, during and after the course.
2. Assess the performance level of the control and experimental group before and after the course and
3. Determine the effectiveness of the course based on students' performance.

Methodology

This section briefly describes quantitative-experimental research design. In particular, this section gives an overview of the study's participants, research instrument, gathering procedure, and statistical treatment.

Research Design

This study proposed an English Learning Online Course developed through the principles of Content-Based Instruction (CBI). Quantitative-experimental method of research was used in this study to determine the effectiveness of the online English learning course. In quantitative research, the aim is to determine the relationship between one thing (an independent variable) and another (a dependent or outcome variable) in a population (Hopkins, 2008). Quantitative research is all about quantifying relationships between variables. In this study, the students' performance is the dependent variable while the online course is the independent variable. The dependent variable was measured using differences between means, which resulted from an experiment where the participants were given a pre-test and a post-test after a treatment. Experimental studies are also known as repeated-measures studies or interventions. In this study, one measurement was taken on all subjects before and after a treatment that involved the use of the online English learning course developed using the principles of CBI.

Furthermore, a descriptive research component was used to investigate the effectiveness of the proposed online course. A questionnaire was given to both student-participants and faculty users to determine their perception on the weaknesses and the strengths of the online course. The questionnaire was only given once after completing the tasks assigned to the participants although, to fully assess their online experience, the questionnaire contained questions about their experience before, during, and after using the online course.

Finally, both the quantitative and qualitative data were accounted for in determining the effectiveness of the proposed Online English Learning Course developed using the principles of CBI.

Participants

A total of eighty (80) students from Bataan Peninsula State University Balanga campus participated in the research. The students were in the same year level from different colleges enrolled in the academic year 2014-2015. The selection of participants was primarily based on the availability of internet connection at home and takers of English 101. The study member assigned to the Balanga campus where the research was conducted identified forty (40) students in the experimental group who had strong internet connection at home before they were asked to participate in the research. Each of them was given an account name and a default passcode so that they can access the course online. The other forty (40) students who are part of the control group were taken from her English 101 classes.

Research Instrument

Two research instruments were used in this study, first were a pre-test and a post-test, and second was a questionnaire. The tests were designed to measure the participants' level of language proficiency before and after using the online English learning course. The tests were validated through a pilot testing conducted with a different set of participants. These tests examined the participants' knowledge and skills in the language areas covered by the online English learning course. The purpose of using the tests was to determine whether the participants' level of language proficiency would improve after using the online course. This study considers that one of the measures of effectiveness of an instructional material is the improvement in students' performance. On the other hand, the questionnaire was used in order to determine the participants' perception about the effectiveness of the online course. The purpose of the questionnaire was to determine the weak points and the strong points of the online course based on their experiences before, during and after the course.

Data Gathering Procedure

For the experimental group, the participants were given a schedule for the pre-test and the post-test exam. All of them were given 50 minutes to answer test questions in the pre-test a day before using the online course. For a



month, they took the online course for a trial period. The participants' performance in the pre-test and in the post-test were recorded and computed. After taking the post-test, a questionnaire was given to the student-participants to determine how their experience with the online course was. The participants were asked to rate their experience before (logging in stage), during (navigating stage) and after (self-testing stage) exploring the content and activities in the online course. The control group, however, also took a pretest using paper and pencil test and went on the usual way of learning things in the classroom under the supervision of the teacher. After going through the ten lessons, they took the posttest. The results were recorded for comparison of their performance to online users.

Development of Online English Learning Course Based on CBI

The development of Online English Learning Course in this study was based on CBI, where different content areas were taken into account as the context of language learning. The development followed the steps listed below:

Step 1 .Identification of relevant content areas. The course designers identified different content areas relevant to the specific users of the online material developed. The texts gathered were adopted and modified based on the learning needs of the students for which the online course was intended.

Step 2. Setting the objectives for every lesson. The objectives in every lesson in the course were set in order to give direction to the sequence of the topics and the creation of the activities and unit tests.

Step 3. Creating activities and evaluation tests. Based on the objectives set for every lesson, activities and evaluation tests were created to determine whether the objectives of the lesson were achieved.

Step 4. Uploading and laying-out of content and activities on the university's official website. Through the help of the university's technical staff, the contents selected and activities created were uploaded and laid-out on the website provided by the university.

Step 5. Reviewing and Editing. The contents and activities uploaded were reviewed and edited out before conducting the pilot testing.

Step 6. Pilot testing. To ensure that the online English learning course was ready for use, a group of users was asked to try out the course and the activities.

Statistical Treatment of Data

In the duration of the CBI English online course, the performance of the students were monitored and recorded for later analysis and interpretation of the gathered data in relation to the objectives of the study. The mean was the statistical tool used for the treatment of the data.

Results and Discussions

After the data were statistically treated, the following are the results. Table 1 presents the mean per statement before the implementation of the program. From the items on the before the implementation of the CBI online English course, only two things were found to be the problems of the students. They were items 8 and 9 which were about the logging-in problems which were promptly addressed and solved and sometimes took time to be solved with means of 3.20 and 3.10 respectively. These could be attributed to weak Internet a connection which happens to most internet users.

Table 1. Mean Per Statement Before the Implementation of the Program

Before the Implementation of the Program	Mean	Equivalent
1. Getting started with online course was effortless.	2.95	Agree
2. I found instructions and directions for logging in clear and easy to follow.	3.13	Agree
3. Learning to navigate the on-line course components was easy.	3.03	Agree
4. Doing what I wanted was manageable using the on-line course components.	3.23	Agree
5. Becoming skillful at using the on-line course components on my own was trouble-free.	3.18	Agree
6. The online course was very accessible anytime I wanted to use it.	3.13	Agree
7. I could freely navigate the features of the online course.	3.10	Agree
8. I would often encounter logging-in problems, which were promptly addressed and solved.	3.20	Agree
9. I would often encounter logging-in problems, which took time to be addressed and solved.	3.10	Agree
10. I find the on-line course easy to use.	3.1	Agree
Average	3.12	Agree

Table 2 presents the mean per statement during the implementation of the program.



Table 2. Mean Per Statement During the Implementation of the Program

During the Implementation of the Program	Mean	Equivalent
1. I could complete the required tasks on my own using the lesson contents.	3.13	Agree
2. I could complete the required tasks using the lesson contents only if someone else would help me get started.	3.08	Agree
3. I could complete the required tasks independently using the lesson contents with more time.	3.23	Agree
4. I could complete the required tasks using the lesson contents with more time and with someone's help.	3.13	Agree
5. I could usually work independently with an assignment by reading and following online instructions.	3.20	Agree
6. Some course components and features of my account did not work properly.	2.90	Agree
7. The course activities assigned to me were manageable.	3.13	Agree
8. The course activities given to me were either too difficult or too easy for me.	3.35	Agree
9. The online course activities I took provided relevant learning experiences that prepared me for my academic requirements.	3.25	Agree
10. The online course activities I took provided relevant learning experiences that would prepare me for my future profession.		
Average	3.15	Agree

From the items on during the implementation of the CBI online English course, four (4) were found to be the problems of the students. They were on items 8,4,2 and 6 with means of 3.35, 3.13, 3.08 and 2.90 respectively. With students' agree responses; the resulting statements became negative things for learning. Students sometimes have difficulty with their lessons but sometimes have found lessons too easy for them, which are not so challenging for them. Sometimes they need some assistance in accomplishing their tasks when already on it or could not get started without someone's help and some course components and features of the course did not work properly.

These problems imply more study of the contents of the course for adoption to various intelligence level of students as well as perhaps longer preparation for digital literacy to effectively manipulate the CBI online English course.

Table 3 presents the mean per statement after the implementation of the program.

Table 3. Mean Per Statement After the Implementation of the Program

After The Implementation Of The Program	Mean	Equivalent
1. My online learning experience has helped me improve as a student.	3.43	Agree
2. My online learning activities prepared me to be a better student in other courses/subjects.	3.48	Agree
3. Taking the online course has helped me improve my study and learning skills in English.	3.33	Agree
4. Taking the online course has helped me improve my study and learning skills not only in English but in other courses/subjects as well.	3.50	Strongly Agree
5. I was able to explore the other features of the course.	3.18	Agree
6. All my expectations were met after completing my online course	3.28	Agree
7. My English language skills has improved.	3.58	Strongly Agree
8. I enjoyed learning with the online English course.	3.40	Agree
9. My English language skills have improved as reflected in my online course performance.	3.20	Agree
10. I would like to take again the online English course to improve further my English skills.	3.48	Agree
Average	3.38	Agree

From the items on after the implementation of the CBI online English course, there were no problems identified but positive effect of the course on the students. These were the two (2) items on the strongly agree side. The students believed that after the course, their English language skills have improved with a mean of 3.58 and that the online course has improved their study learning skills not only in English but in other courses/subjects as well with a mean of 3.50. These imply achievement of the objectives of the course to really improve the English skills



of the student-users of the program not only for English course consumption but also for other subjects as well.

Table 4 presents the mean result of Pretest and Posttest of students on paper and pencil test.

Table 4. Mean Result of Pretest and Posttest using Paper and Pencil Test of Students Under Traditional Teaching

Paper And Pencil Test		
	Pretest	Posttest
Mean	25.65	28.50

The mean result for pretest is reflected at 25.65 while the posttest with a mean of 28.5. The table shows that there is an increase in the posttest by 2.85. This indicates that the performance of the group has increased.

Table 5 presents the mean result of pretest and posttest of students under CBI Online English course

Table 5. Mean Result of Pretest and Posttest using CBI Online Test of Students Under CBI Online English Course

Online		
	Pretest	Post Test
Mean	25.25	33.33

The table shows that there is an increase in the mean of the post test by 8.05. This implies that the performance of the group has a significant increase. This only shows that the intervention given has great effect in the performance of students.

Table 6 presents the significant differences of pretest and posttest results between traditional learning and CBI English online.

Table 6. Significant Differences of Pretest and Posttest Results Between Traditional Learning and CBI English Online

Test	Cv At A = 0.05	T _{Computed}	Remarks
Online (Pretest Vs. Posttest)	±2.023	-4.57	Significant
Test Paper (Pretest Vs. Posttest)	±2.023	-5.83	Significant
Online Vs Test Paper	±1.993	4.31	Significant

The table shows that at 5% level of significance there is a significant difference between the means of the pretest and posttest of the online intervention as well as on the traditional method. This implies that the performance of students increased on both methods. However, between the two methods, the online intervention shows a very significant effect on the increase of the performance of students; therefore making CBI online English course an effective means in developing students' English skills.

Summary and Conclusion

Content-based online English course is the researchers' offering in the improvement of students' English skills in the university. Pitted with traditional teaching, the research aimed to find out the significance of students' academic performance based on comparison of their pretest and posttest results after being subjected to traditional and blended learning environment respectively. This was done for concluding whether or not CBI online English course would be effective as a tool for developing the English skills of the students in the university.

The courseware pitted against traditional learning consisted of 10 lessons with contents based on varied subject matters and were uploaded in BPSU website. A trial of one month was done to selected students for the blended learning environment and the traditional learning environment.

Results showed increase performances in the course but more evident with students who took the CBI online English course making the online course, a better and more effective means of developing students' English skills.



Recommendations

Based on the findings of the study, the following are recommended:

1. Digital literacy be part of the orientation program for student-users of CBI online English course for easier manipulation of computers and course features.
2. More and varied lessons for students with different levels of intelligence.
3. Incorporate multi-media content for further improvement of the courseware for students' better academic performance.
4. Development of other online courses in the university.

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